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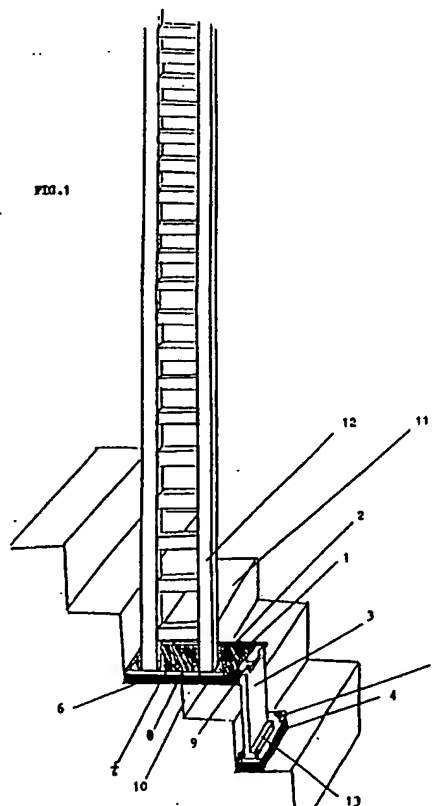
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(54) Stair-ladder platform

(57) A portable stair-ladder platform comprising a ladder support platform (1) and a support member (3,21,41,59,75,85) pivotally attached to the platform by a pivotal coupling (9,84,86), the parts being arranged such that, when assembled and in use with the ladder support platform (1) substantially horizontal and the support member (3,21,41,59,75,85) substantially vertical, an upwardly-facing surface area of the support member (3,21,41,59,75,85) abuts a downwardly-facing surface area of the ladder support platform (1), the pivotal coupling (9,84,86) and the surface areas being arranged to tend to maintain substantially a right angle between the abutting parts even when weight is applied to the ladder support platform (1), and the pivotal coupling (9,84,86) being such as to prevent pivoting of the support member (3,21,41,59,75,85) substantially beyond the vertical in that angular direction which is towards the underside of the ladder support platform (1) but whilst allowing pivoting of the support member (3,21,41,59,75,85) in the other direction so as to allow the device to be collapsed for transportation or storage.



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Description

This invention relates to a portable stair platform for use with a ladder.

Stairs are well-known to be awkward places in which to work from, be it decorating or carrying out general maintenance to adjoining walls and ceilings.

When undertaking such tasks, the standard method used is a scaffold board bridged across two ladders pitched at different heights along the run of the staircase. This is not only very unstable, but does not enable the user to reach high ceilings and walls.

Purpose built towers are available on the market which are more stable than the makeshift method, but are not completely movement free, are very large and relatively expensive. When in use, stairwells are blocked rendering them and whole floor areas out of use. Moreover, when not in use these towers are very bulky to store and not designed with ease of transport in mind.

Stair ladders can also be purchased, but are very limited in their application. One must not work above a certain point, thus limiting the heights which can be reached.

According to a first aspect of the present invention, there is provided a stair-ladder platform device which is collapsible for transportation and storage and comprises a ladder support platform and a support member pivotally attached to the ladder support platform by a pivotal coupling, the ladder support platform having a recessed portion to receive the support member in the collapsed state of the device, the parts being arranged such that, when assembled and in use with the ladder support platform substantially horizontal and the support member substantially vertical, an upwardly-facing surface area of the support member abuts a downwardly-facing surface area of the ladder support platform, the pivotal coupling and the surface areas being arranged to tend to maintain substantially a right angle between the abutting parts even when weight is applied to the ladder support platform, and wherein the pivotal coupling is adapted to allow the support member to be displaced to a position in which it is received in the recessed portion of the ladder support platform for storage and/or transport.

Advantageously, when the device is assembled and in use, the pivotal coupling is such as to prevent pivoting of the support member substantially beyond the vertical in that angular direction which is towards the underside of the ladder support platform but whilst allowing pivoting of the support member in the other direction so as to allow the device to be collapsed for transportation or storage.

According to a second aspect of the present invention, which may be additional to or alternative to the first aspect, there is provided a stair-ladder platform device which is collapsible for transportation and storage and comprises a ladder support platform and a support member pivotally attached to the platform by a pivotal coupling, the parts being arranged such that, when

assembled and in use with the ladder support platform substantially horizontal and the support member substantially vertical, an upwardly-facing surface area of the support member abuts a downwardly-facing surface area of the ladder support platform, the pivotal coupling and the surface areas being arranged to tend to maintain substantially a right angle between the abutting parts even when weight is applied to the ladder support platform, and the pivotal coupling being such as to prevent pivoting of the support member substantially beyond the vertical in that angular direction which is towards the underside of the ladder support platform but allowing pivoting of the support member in the other direction so as to allow the device to be collapsed for transportation or storage.

Advantageously, there is provided a surface area of the support member which surface area, when the device is assembled and in use with the ladder support platform substantially horizontal and the support member substantially vertical, abuts an opposing surface area of the ladder support platform, the pivotal coupling being located above the abutting surface areas so as to prevent pivoting of the support member about a fulcrum defined by the abutting surface areas substantially beyond the vertical in that angular direction which is towards the underside of the ladder support platform but allowing pivoting of the support member in the other direction so as to allow the device to be collapsed for transportation or storage.

The opposing surface areas may be additional to or replace the upwardly- and downwardly-facing surface areas described above. The planes of the opposing surface areas are oriented so as to have at least a vertical component, and in some embodiments are substantially vertical. This arrangement provides additional stability for the stair-ladder platform when assembled and in use.

In a preferred embodiment, the pivotal coupling is such as to allow the support member to slide relative to the ladder support platform when the device is being assembled or collapsed. In one suitable form of pivotal coupling, the coupling comprises engagement means carried by one of the support member and the ladder support platform, which engagement means is slidably engageable in a pair of substantially parallel elongate guides provided along the length of the other of the support member and the ladder support platform. The elongate guides may be formed on the inner faces of a pair of ladder stops, one being provided along either edge of the ladder support platform. This arrangement provides the advantage that a rigid platform may be set up simply by sliding the support member relative to the ladder support platform from an initial, compact configuration, in which the support member and the ladder support platform are substantially parallel and adjacent, to an intermediate configuration in which the support member is still parallel to, but overhangs, the ladder support platform, to a final, working configuration, in which the support member is pivoted downwardly so that a surface

area of the support member abuts a surface area of the ladder support platform in such a way that substantially all weight applied to the ladder support platform is borne by the abutting surface areas and not by the pivotal attachments.

Alternatively, the engagement means may be located at one end region of the ladder support platform and the elongate guides may be formed along the edges of the support member.

Instead of a sliding arrangement, the support member may be attached to the ladder support platform by a simple pivot arrangement, the support member being swung about an angle in the region of 270° from the initial position to the final position.

In a further alternative embodiment, the pivotal coupling may be releasable, thereby enabling the support member to be released from its initial configuration relative to the ladder support platform and re-attached in the final, working configuration.

The stair-ladder platform is advantageously adapted to extend, in use, over no more than two stairs. In other words, the respective lengths of the support member and the ladder support platform are such that when the stair-ladder platform is erected, the base of the support member rests on a first stair going, and the ladder support platform rests on the going of the stair no more than two above the first. This embodiment of the present invention is particularly stable in use.

Embodiments of the invention featuring the recessed portion in the ladder support platform of the first aspect may advantageously comprise a base which, when the device is assembled and in use, is located at the lower end of the support member, and is shaped so that, when the device is in a collapsed state for transportation or storage, the base closes one end of a channel defined in the ladder support platform by the recessed portion.

The base can provide additional stability for the stair-ladder platform device when assembled, and enables the device to adopt a neat and compact configuration when collapsed, since the base may be shaped and sized so as to form a closure panel which is substantially flush with the cross-section of the ladder support platform and the support member when these are in the collapsed state. The base may be non-pivotally or pivotally attached to the support member.

In some embodiments of the present invention, there is provided a base pivotally attached to the support member, which base, when the device is assembled and in use with the ladder support platform and the base substantially horizontal and the support member substantially vertical, an upwardly-facing surface area of the base abuts a downwardly-facing surface area of the support member, the pivotal coupling and the surface areas being arranged to tend to maintain substantially a right angle between the abutting parts even when weight is applied to the ladder support platform.

The base helps to provide additional stability for the stair-ladder platform as a whole.

According to a third aspect of the present invention, which may be additional to or alternative to the first and second aspects, there is provided a stair-ladder platform which is collapsible for transportation and storage and comprises three parts: i) a ladder support platform, ii) a support member pivotally attached to the platform and iii) a base pivotally attached to the support member, the parts being arranged such that, when assembled for use, a first surface area of the support member abuts a surface area of the ladder support platform and a second surface area of the support member abuts a surface area of the base, the pivotal attachments and the surface areas being arranged to tend to maintain substantially a right angle between each pair of abutting parts when weight is applied to the ladder support platform.

In one embodiment, the support platform is attached to the support member in such a way that the support member traverses through an angle in the region of 270° in going from its collapsed to its assembled condition.

According to a fourth aspect of the present invention, which may be additional to or alternative to the first, second and third aspects, there is provided a stair-ladder platform device which is collapsible for transportation and storage and comprises a ladder support platform and a support member pivotally attached to the platform, wherein the support member is provided with a height adjustment in the form of a telescopic mechanism.

A telescopic mechanism is to be understood in this context as one in which the support member comprises at least two parts which may be reciprocated without relative rotational movement of the parts (although it is envisaged that a rotational mechanism, such as a worm screw, may be used to generate the reciprocal motion). Such a telescopic height adjustment allows the stair-ladder platform to be set quickly and accurately for different sizes of stair riser.

According to a fifth aspect of the invention, which may be additional to or alternative to the first, second, third and fourth aspects, there is provided a stair-ladder platform which is collapsible for transportation and storage and comprises two parts: i) a ladder support platform and ii) a support member pivotally attached to the platform, there being a height adjustment in the form of a jacking mechanism, or other screw-threaded mechanism, activated by one or more handles.

Embodiments of the stair-ladder platform can be used in conjunction with a wide range of general purpose ladders incorporating height and width-adjusting methods for use with variable stair sizes, for example domestic, institutional or industrial stair types. These embodiments can be quickly retracted for compact storage and transportation and can be adapted to be constructed from any suitable material, including wood, strengthened aluminium, pressed steel or even suitable plastics.

Preferably, the parts are arranged such that, when

assembled for use, the support member has a surface area which abuts a surface of the ladder support platform, the pivotal attachment and the surface areas being arranged to tend to maintain substantially a right angle between the abutting parts when weight is applied to the ladder support platform.

Advantageously, a locking mechanism may be provided so as to help maintain the support member and the ladder support platform substantially at right angles to each other when the stair-ladder platform is assembled for use.

In addition, there may be provided a ladder support platform adjustment to accommodate different widths of going on stairs, for example in the form of a manually-guided mechanism or a jacking mechanism, or other screw-threaded mechanism, activated by one or more handles. Alternatively or in addition, a telescopic mechanism may be used.

Further aspects and alternatives will be apparent from the following descriptions:

Fig. 1 shows in perspective one example of the stair-ladder platform with a ladder in use.

Fig. 2 shows an enlarged perspective view of the stair-ladder platform of Fig. 1.

Fig. 3 shows a perspective view of the example shown in Fig. 1 and Fig. 2 folding into its closed, portable/storage position.

Fig. 4 shows a perspective view of the example shown in Figs. 1-3 in its closed, portable/storage position.

Fig. 5 illustrates the underside of the example shown in Figs. 1-4.

Fig. 6 shows an enlarged fragmentary view of the platform and ladder stops.

Fig. 7 shows a cross-sectional view taken substantially in the plane of the line 7-7 in Fig. 2.

Fig. 8 shows in perspective an alternative example of a stair-ladder platform.

Fig. 9 shows a cross-sectional view taken substantially in the plane of the line 9-9 in Fig. 8.

Fig. 10 shows a perspective view of the underside of the example shown in Figs. 8 and 9 in its closed, portable/storage position.

Fig. 11 shows a perspective view of an alternative foot member as an integral part of the example shown in Figs. 8-10.

Fig. 12 shows a plan view of the underside of the example shown in Fig. 11.

Fig. 13 shows a perspective view of a further alternative example.

Fig. 14 shows a cross-sectional view taken substantially in the plane of the line 14-14 in Fig. 13.

Fig. 15 shows a perspective view of the underside of the example shown in Figs. 13-14.

Fig. 16 shows a rear plan view of the example of a stair-ladder platform shown in Figs. 13-15.

Fig. 17 shows in perspective an alternative base applied to the stair-ladder platform shown in Figs.

13-16.

Fig. 18 shows in perspective a further alternative example of a stair-ladder platform.

Fig. 19 shows a cross-sectional view taken substantially in the plane of the line 19-19 in Fig. 18.

Fig. 20 shows a front plan view of the stair-ladder platform shown in Figs. 18 and 19.

Fig. 21 shows an alternative positioning of the height handles applied to the example shown in Fig. 13 with the gearing mechanism shown in Fig. 19.

Fig. 22 shows in perspective a further alternative example of a stair-ladder platform with an alternative height adjusting method applied to the example shown in Fig. 2.

Fig. 23 is a cross-sectional view of the example shown in Fig. 22.

Fig. 24 shows in perspective a further alternative example of a stair-ladder platform.

Fig. 25 shows a perspective view of the example shown in Fig. 24 in its partially folded position.

Fig. 26 shows a perspective view of the example shown in Figs. 24-25 in a position prior to closure/storage.

Fig. 27 shows a perspective view of the example shown in Figs. 24-26 in a closed transportation position.

Fig. 28 is a cross-sectional view of the example shown in Fig. 24.

Fig. 29 shows in perspective a further alternative example of a stair-ladder platform comprising a ratchet mechanism.

Fig. 30 is a cross-sectional view of the example shown in Fig. 29.

Fig. 31 shows in perspective a further alternative example of a stair-ladder platform comprising a screw mechanism.

Fig. 32 is a cross-sectional view of the example shown in Fig. 31.

Referring to the drawings, Fig. 1 illustrates one embodiment of the stair-ladder platform, comprising a platform 1 with integral ladder stops 2 and a vertical support member 3 pivotally attached by hinges 9, best shown in Fig. 2. A support-to-platform stop 15 fixed to the vertical support 3 abuts the platform 1 at right angles to the said member as also shown in Fig. 7. A base 4 is pivotally attached by hinges 14 to the support 3 on the sides opposite to the platform hinges 9. The support-to-base stop 13 abuts the base 4 at right angles, the opposing forces of hinges 9 and 14 along with oppositely fixed support stops 15 and 13 effecting a rigid structure best shown in Fig. 7. Wing-nutted height adjusters 5 are connected by threaded sleeves 19 and wingnut stops 18 to adjustable feet 16 (as shown in Fig. 7) to enable the platform 1 to be aligned horizontally on a stair going 11. A spirit level 8 may be provided to assist alignment. The edge of platform 1 opposite to the platform hinges 9 is butted against a stair riser 10

(see Fig. 1). Buffers 6 located on the outer edge of the platform 1 and the base 2 are to protect the surface abutted by the stair-ladder platform. A non-slip rubber stair grip 17, best shown in Fig. 5, grips the stair going 11 when the ladder 12 is positioned on the non-slip ladder grip 7 (as shown in Fig. 6) and pitched against the wall of the staircase and weight applied.

After use, the ladder 12 is removed and the stair-ladder platform is pivotally collapsed about its pivoted axis 9 and 14 as shown in Fig. 3 to a compact stowed position, best shown in Fig. 4.

The stair-ladder platform can be placed anywhere within a staircase by following the procedures above.

A second embodiment of the stair-ladder platform can best be seen in Fig. 8. This alternative embodiment comprises a platform 1a with integral ladder stops 2 and a vertical support 21 pivotally fixed by a bar-hinged support strut 31 to a recessed metal slide plate 32, best shown in Fig. 9. The support 21 pivots on a bar hinge 30 parallel to the platform 1a, best shown in Figs. 9 and 12, to the vertical, with hinged base 22 pivotally attached by hinges 23 abutting the support/base stop 36 at right angles with the base 22 and support 21, as best shown Figs. 8 and 9. The support 21 can be moved towards or away from the stair riser 10 within the width-adjusting support guide 24, best shown in Fig. 8. The recessed metal slide plate 32 slides within metal plate guides 38, best shown in Fig. 10. Wing-nutted bolts 34 fixed through holes in the metal slide plate 32 are guided within recessed bolt guides 20 (see Fig. 9) to a desired position and locked.

A non-slip rubber grip 17 sits firmly on the stair going 11 with the leading buffered edge 6 of the platform 1a opposite to the support member abutting the stair riser 10 as shown in Fig. 1.

A height adjusting handle 25 activates a jack gearing 27 within a housing 26 which in turn rotates a height-adjusting worm 28 clockwise or anti-clockwise depending on the desired platform height.

There is provided a threaded coupling 29 fixed to bar hinge support strut 31. The coupling 29 travels in an upward or downward direction along the worm thread 28 when the height adjusting handle 25 is turned. A rubber worm stay 35 is provided to maintain the parallel separation between the worm 28 and the support 21, as shown in Fig. 9. An integral spirit level 8 can be provided to assist horizontal alignment.

When not in use, this example of a stair-ladder platform can be pivotally returned to the compact transportation/storage position about its axis as shown in Fig. 10, with a retaining strap 37 in place.

A further addition to this example set out above is an alternative integral rigid support foot 33 incorporating plastic protection buffers 6 and a non-slip rubber stair grip 17, best shown in Figs. 11 and 12.

In addition, or as an alternative to the above examples, a further embodiment is described as follows. Referring to Fig. 13, there is provided a platform 1b for supporting a ladder 12 with integral ladder stops 2 and

two vertical leg supports 41 joined by cross members 40, and pivotally attached by a bar hinge 55 passing through each vertical leg support 41 and fixed with locking collars 51 onto a width-adjusting slide plate 50 best shown in Fig. 16.

The vertical leg supports 41 are pivoted parallel to the platform 1c, best shown in Fig. 15, to the vertical, as in Fig. 13, with the uppermost edge of the vertical leg supports 41 abutting the underside of the width-adjusting slide plate 50 at right angles. The base foot 45 is fixed as an integral member to adjustable legs 44 so as to sit firmly on the stair going 11.

The leg supports 41 can be adjusted to fit stair goings of varying widths. The width-adjusting means comprises the metal slide plate 50 guided within a slide plate 49, wing-nutted bolts 34 fixed through drilled holes in the metal slide plate 50 and locating recessed bolt guides 48, which incorporate a metal slide plate for ease of action, best shown in Fig. 14.

The height adjusting handles 25a are guided within handle slots 39 best shown in Fig. 13. The desired position on the stair going 11 is set by wing-nutted bolts 34.

The height adjusting mechanism comprises two vertical leg supports 41, each housing adjustable legs 44 and a height adjusting mechanism in the form of worms 54 locked in position by locking collars 47 abutting the upper enclosed face of support leg 41. The worm continues to a further set of locking collars 46 and in turn through to the two adjusting handles 25a. Along the worms 54 are provided worm couplings 52 which travel up or down the worms 54 depending on the direction of rotation of adjusting handles 25a. The worm couplings 52 are bolted to adjustable legs 44, thus raising or lowering the said members on rotation of the adjusting handles 25a. This in turn brings platform 1b to the horizontal. An integral spirit level 8 may be provided to assist alignment. When not in use, this stair-ladder platform can be pivotally returned to position shown in Fig. 15.

A further addition to the example set out above is an alternative hinged foot 22 as best shown in Fig. 17 attached by base hinges 23 to the base foot 45, the underside of which abuts the base surface forming a rigid structure when weight is applied.

Fig. 18 illustrates an additional embodiment of the stair-ladder platform, comprising a platform 1c for supporting a ladder 12, a support member 59 pivotally attached by a bar hinge 55 passing through drilled holes in each portion of a vertical leg support 59, best shown in Figs. 19 and 20. These in turn are locked into a width-adjusting slide plate 73 by bar collars 51. The slide plate 73 slides within slide plate guides 74. Wing-nutted bolts 34, located through drilled holes in slide plate 73, sit on a recessed metal slide plate 48 for ease of action.

The width-adjusting handle 60, when rotated, turns worm 70 within a handle guide 65 and is kept in position by locking collars 63. The worm coupling 69, located along the worm 70, is fixed to the slide plate 73 and in turn adjusts the slide plate 73 to the desired position,

which in turn is set by worm-coupled bolts 34. A worm receiver 72, with a worm shaft 73, is provided to maintain the worm 70 parallel to the platform 1c, as shown in Fig. 19.

The height adjustment comprises a vertical leg support 59 pivotally attached, as described above, to slide plate 73, encasing an adjustable leg 58 fixed to a worm coupling 68. The worm coupling 68 travels up and down the worm 67, when handle 61, fixed through the vertical support 59 and locked in position by locking collars 64, is rotated in either a clockwise or an anti-clockwise direction. There is provided for this action gearing wheels 66a and 66, best shown in Fig. 19. Gearing wheel 66a is fixed to the handle 61 and gearing wheel 66 is fixed to the worm 67. The integral base foot 62 in turn is raised or lowered so as to effect a horizontal alignment of platform 1c on the stair going 11. A spirit level 8 may be provided to assist alignment. When not required for use, this stair-ladder platform may be collapsed by carrying out the above sequence in reverse. It is important to note that when the distance between strings of staircases is relatively wide, e.g. on institutional/industrial stairs, the stair-ladder platform does not need to be butted up against the stair string. The platform can be placed anywhere on the stair going and the ladder pitched anywhere within the platform, not necessarily against the ladder stops, to attain the recommended 75° pitch.

Fig. 22 illustrates an additional embodiment of the stair-ladder platform comprising a platform 1d with integral ladder stops 2d and a support member 75 pivotally attached by hinges 9d to platform 1d. A support-to-platform stop 15d fixed to the support member 75 abuts the platform 1d at right angles to the said member 75 as shown in Fig. 23. The height adjusting mechanism comprises a vertical support member 75 pivotally attached as described above to the platform 1d encasing an adjustable leg 76 fixed to a worm coupling 77. The worm coupling travels up and down the worm 78 when handle 79, fixed through the vertical support member 75 and locked in position by locking collars 79, is rotated in either a clockwise or an anti-clockwise direction. There is provided for this action gearing wheels 80 and 81 as shown in Fig. 23. A base foot 82, which is pivotally attached to adjustable leg 76 by hinges 83 (best shown in Fig. 22) is in turn raised or lowered so as to effect horizontal alignment of the platform 1d on the stair going 11. A spirit level 8d may be provided to assist alignment. The support-to-base stop 13d abuts base 82 and support leg 76 at right angles.

The edge of the platform 1d opposite to the platform hinges 9d is butted against the stair riser 10 as in Fig. 1. Buffers 6d located on the outer edge of platform 1d and base 82 provide protection for the surface abutted by the stair-ladder platform. A non-slip rubber stair grip 17d grips the stair going 11 when the ladder 12 is positioned on a non-slip ladder grip 7d as shown in Fig. 22 and pitched against the wall of the staircase and weight applied.

After use, the ladder 12 is removed and the stair-ladder platform is pivotally collapsed about its pivoted axis 9d and 83 in the manner shown in Figs. 3 and 4. It is important to note that the opposing forces of the oppositely fixed hinges 9d and 83 along with the oppositely fixed support stops 13d and 83 form a rigid structure when weight is applied.

A further embodiment of the stair-ladder platform is shown in Figs. 24-28. This alternative example comprises a platform 1e with integral ladder stops 2e incorporating pivot slide guides 84. A vertical support member 85 with an integral pivot bar 86 attaches to the platform 1e within the pivot slide guides 84, enabling the support member 85 to slide from a storage position best shown in Fig. 27 through to an operating position shown in Fig. 24 by pulling said member away from its housing in the manner illustrated in Figs. 25 and 26. The support member 85 abuts the underside of platform 1e (as shown in Figs. 24 and 28) at right angles with the integral pivot bar 86 stopping at the end of the pivot slide guides 84 (as shown in Figs. 24 and 28). The abutting edge of the support member 85 rests within a recess 87 on the underside of the platform 1e as shown in Figs. 24 and 28. The top of the support member 85 and the pivot bar 86 may, in some embodiments, act as a ladder stop.

Encased within the support member 85 is provided a height adjusting mechanism in the form of an adjustable leg 88 fixed to a worm coupling 89. The worm coupling 89 travels up and down a worm 90 when a handle 91, fixed through the support member 85 and locked in position by locking collars 92, is rotated in either a clockwise or an anti-clockwise direction. There is provided for this action gearing wheels 93 and 94 as shown in Fig. 28. The integral base foot 95 in turn is raised or lowered so as to achieve horizontal alignment of the platform 1e on the stair going 11. A spirit level may be provided to assist alignment. The edge of the platform 1e opposite to the pivot bar 86 is butted up against the stair riser 10 as in Fig. 1. Buffers 6e located on the outer edge of the platform 1e and the base foot 95 are provided to protect the surface abutted by the stair-ladder platform. A non-slip rubber stair grip 17e grips the stair going 11 when the ladder 12 is positioned on a non-slip ladder grip 7e (as shown in Fig. 24) and pitched against the wall of the stairwell and weight applied. A support-to-platform stop 96 may be provided for additional stability. Where a locking mechanism (not shown) is provided so as to lock the support member 85 and the platform 1e in the operating position, the stair-ladder platform may be used without the edge of the platform 1e remote from the pivot bar 86 abutting the stair riser 10.

After use, the above sequence is carried out in reverse so as to bring the stair-ladder platform into a configuration allowing compact storage and/or transportation.

An alternative embodiment of the present invention comprising a ratchet-type height adjustment is shown in Figs. 29 and 30. The support member 105 includes an adjustable leg 108, which leg is provided with a ratchet

section 100. A pawl 101 is mounted on the support member 105 in such a way that the leg 108 may be telescopically extended from and retracted into the support member 105 by activating the pawl 101.

A further alternative embodiment of the present invention comprising a screw-type height adjustment is shown in Figs. 31 and 32. The support member 115 includes an adjustable leg 118, which leg is provided with a screw thread 110 which engages with a complementary screw thread 111 provided inside the support member 115. The leg 118 may be extended from and retracted into the support member 115 simply by rotation. For additional security, a locking nut 112 may be provided.

Claims

1. A stair-ladder platform device which is collapsible for transportation and storage and comprises a ladder support platform and a support member pivotally attached to the ladder support platform by a pivotal coupling, the ladder support platform having a recessed portion to receive the support member in the collapsed state of the device, the parts being arranged such that, when assembled and in use with the ladder support platform substantially horizontal and the support member substantially vertical, an upwardly-facing surface area of the support member abuts a downwardly-facing surface area of the ladder support platform, the pivotal coupling and the surface areas being arranged to tend to maintain substantially a right angle between the abutting parts even when weight is applied to the ladder support platform, and wherein the pivotal coupling is adapted to allow the support member to be displaced to a position in which it is received in the recessed portion of the ladder support platform for storage and/or transport.
2. A device as claimed in claim 1, in which, when the device is assembled and in use, the pivotal coupling is such as to prevent pivoting of the support member substantially beyond the vertical in that angular direction which is towards the underside of the ladder support platform but whilst allowing pivoting of the support member in the other direction so as to allow the device to be collapsed for transportation or storage.
3. A stair-ladder platform device which is collapsible for transportation and storage and comprises a ladder support platform and a support member pivotally attached to the platform by a pivotal coupling, the parts being arranged such that, when assembled and in use with the ladder support platform substantially horizontal and the support member substantially vertical, an upwardly-facing surface area of the support member abuts a downwardly-facing surface area of the ladder support platform, the pivotal coupling and the surface areas being arranged to tend to maintain substantially a right angle between the abutting parts even when weight is applied to the ladder support platform, and the pivotal coupling being such as to prevent pivoting of the support member substantially beyond the vertical in that angular direction which is towards the underside of the ladder support platform but allowing pivoting of the support member in the other direction so as to allow the device to be collapsed for transportation or storage.
4. A device as claimed in claim 1, 2 or 3, wherein there is provided a surface area of the support member which surface area, when the device is assembled and in use with the ladder support platform substantially horizontal and the support member substantially vertical, abuts an opposing surface area of the ladder support platform, the pivotal coupling being located above the abutting surface areas so as to prevent pivoting of the support member about a fulcrum defined by the abutting surface areas substantially beyond the vertical in that angular direction which is towards the underside of the ladder support platform but allowing pivoting of the support member in the other direction so as to allow the device to be collapsed for transportation or storage.
5. A device as claimed in claim 3 or 4, wherein the ladder support platform has a recessed portion to receive the support member in the collapsed state of the device, and wherein the pivotal coupling is adapted to allow the support member to be displaced to a position in which it is received in the recessed portion of the ladder support platform for storage and/or transport.
6. A device as claimed any one of the preceding claims, wherein the pivotal coupling is such as to allow the support member to slide relative to the ladder support platform when the device is being assembled or collapsed.
7. A device as claimed in claim 1, 2 or 5, or claim 6 when appended to claim 5, comprising a base which, when the device is assembled and in use, is located at the lower end of the support member, and is shaped so that, when the device is in a collapsed state for transportation or storage, the base closes one end of a channel defined in the ladder support platform by the recessed portion.
8. A stair-ladder platform which is collapsible for transportation and storage and comprises three parts:
 - i) a ladder support platform,
 - ii) a support member pivotally attached to the platform and

iii) a base pivotally attached to the support member,

the parts being arranged such that, when assembled for use, a first surface area of the support member abuts a surface area of the ladder support platform and a second surface area of the support member abuts a surface area of the base, the pivotal attachments and the surface areas being arranged to tend to maintain substantially a right angle between each pair of abutting parts when weight is applied to the ladder support platform.

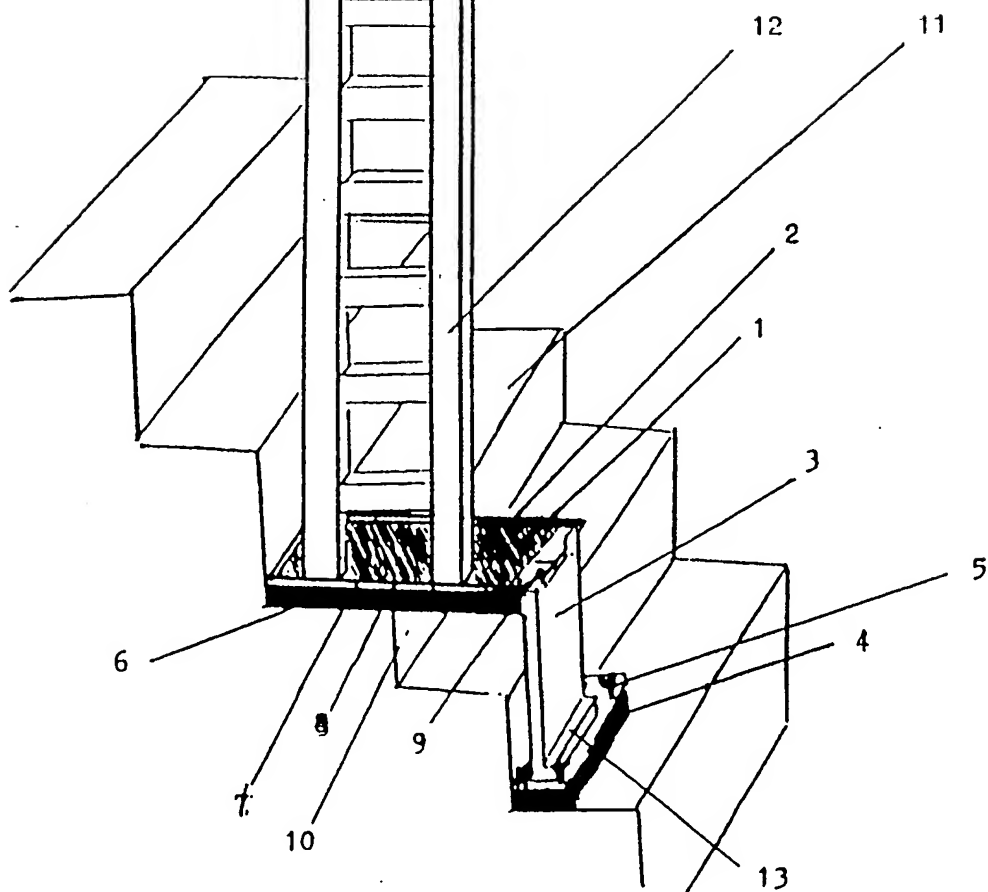
9. A stair-ladder platform which is collapsible for transportation and storage and comprises two parts:

- i) a ladder support platform and
- ii) a support member pivotally attached to the platform,

there being a height adjustment in the form of a jacking mechanism, or other screw-threaded mechanism, activated by one or more handles.

10. A stair-ladder platform as claimed in any one of the preceding claims, wherein the ladder support platform includes adjustment means for adjusting its length.

FIG. 1



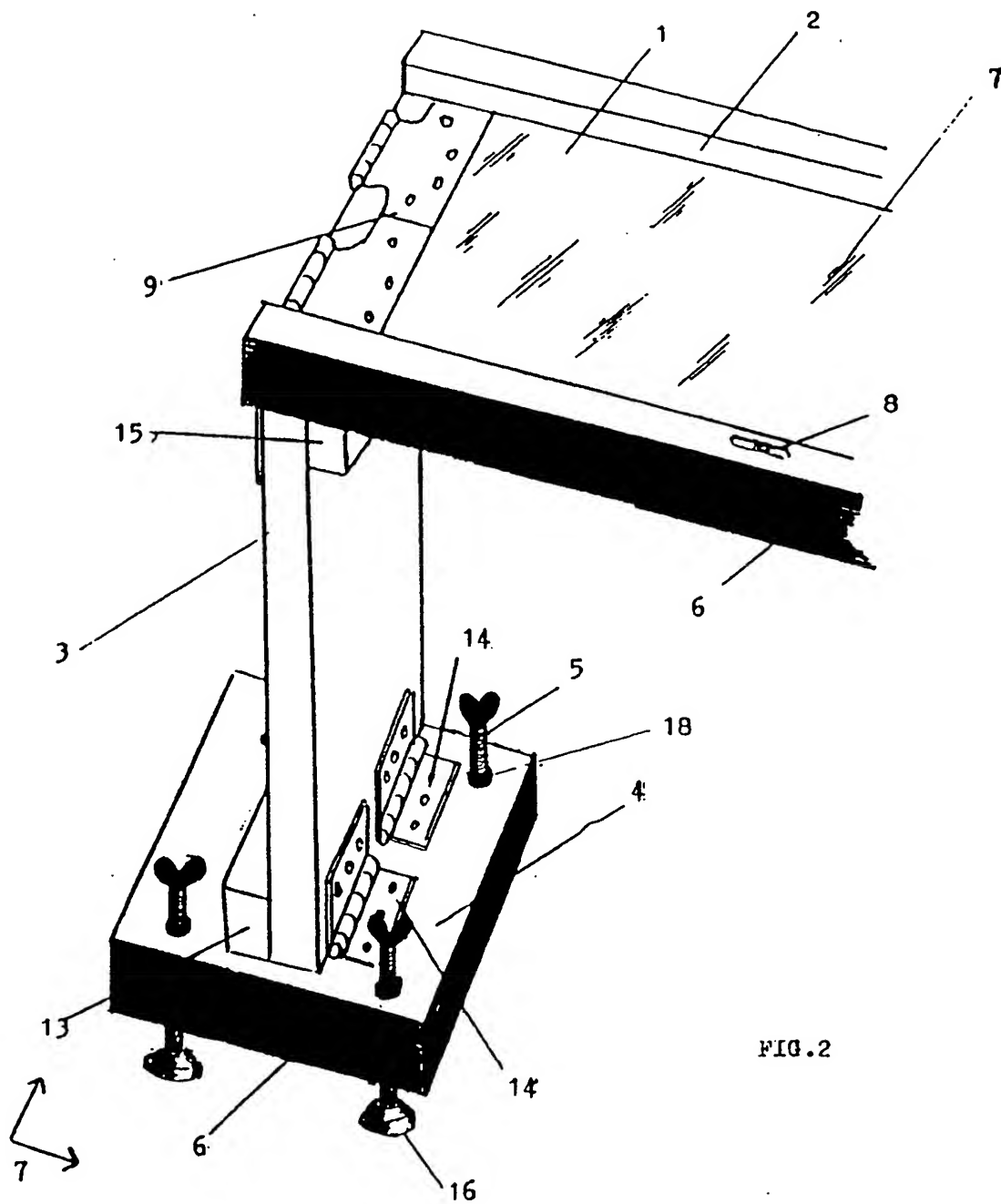
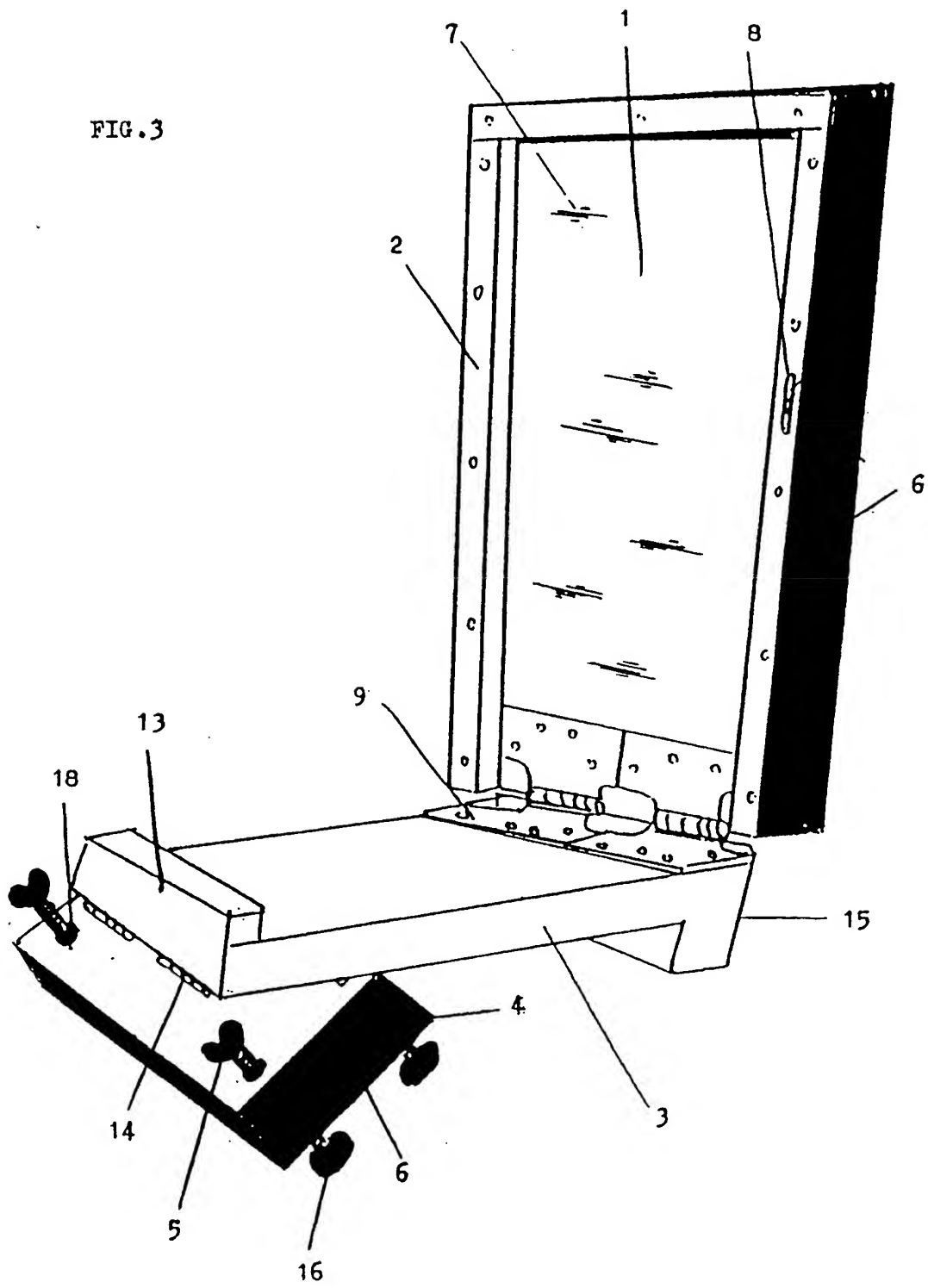


FIG. 2

FIG. 3



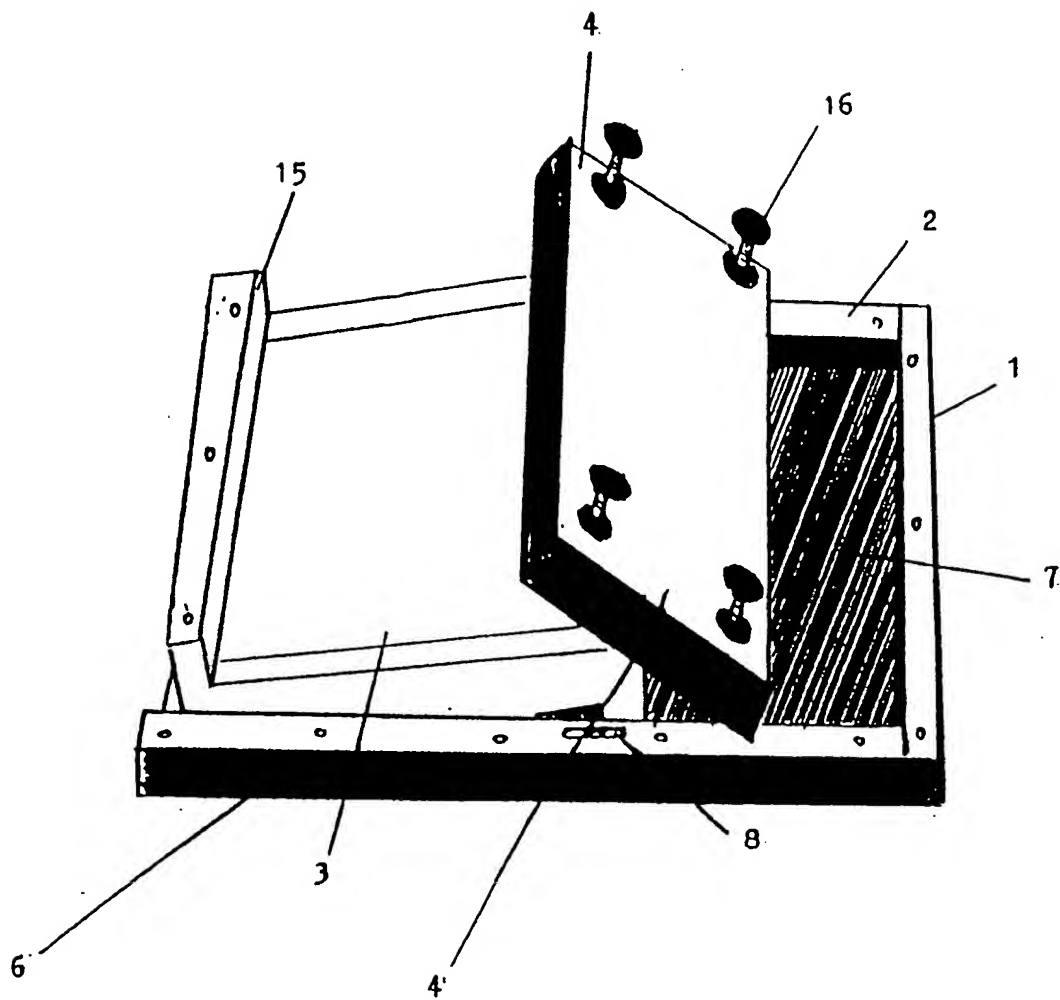


FIG. 4

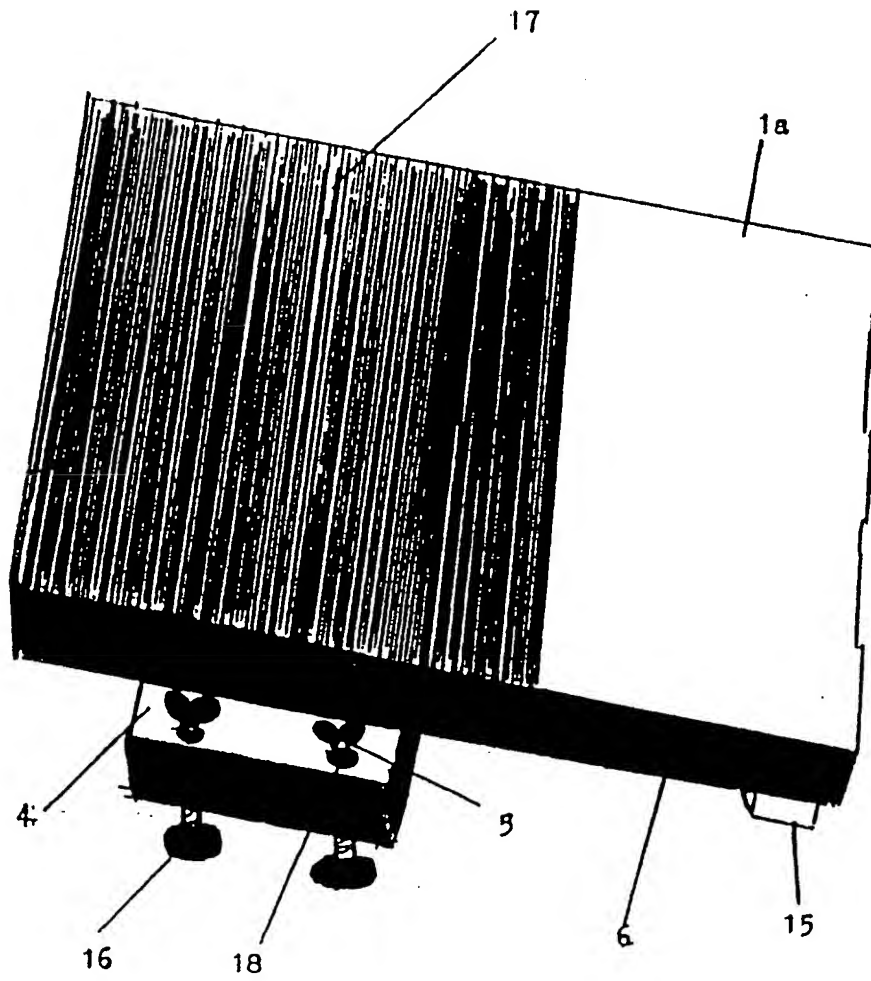


FIG. 5

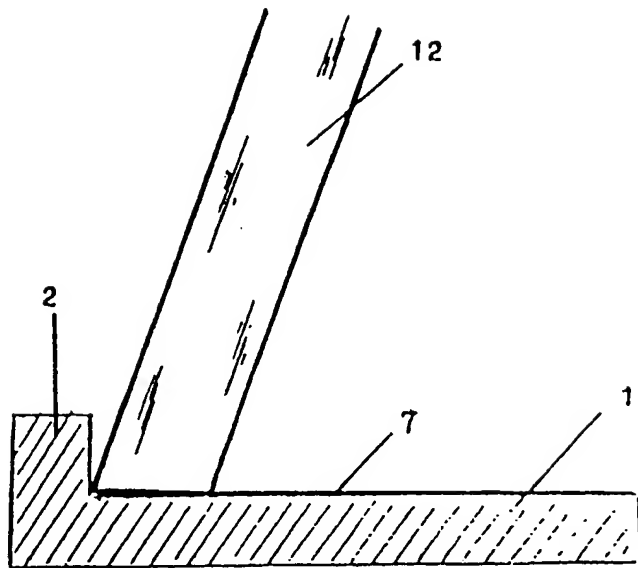


FIG. 6

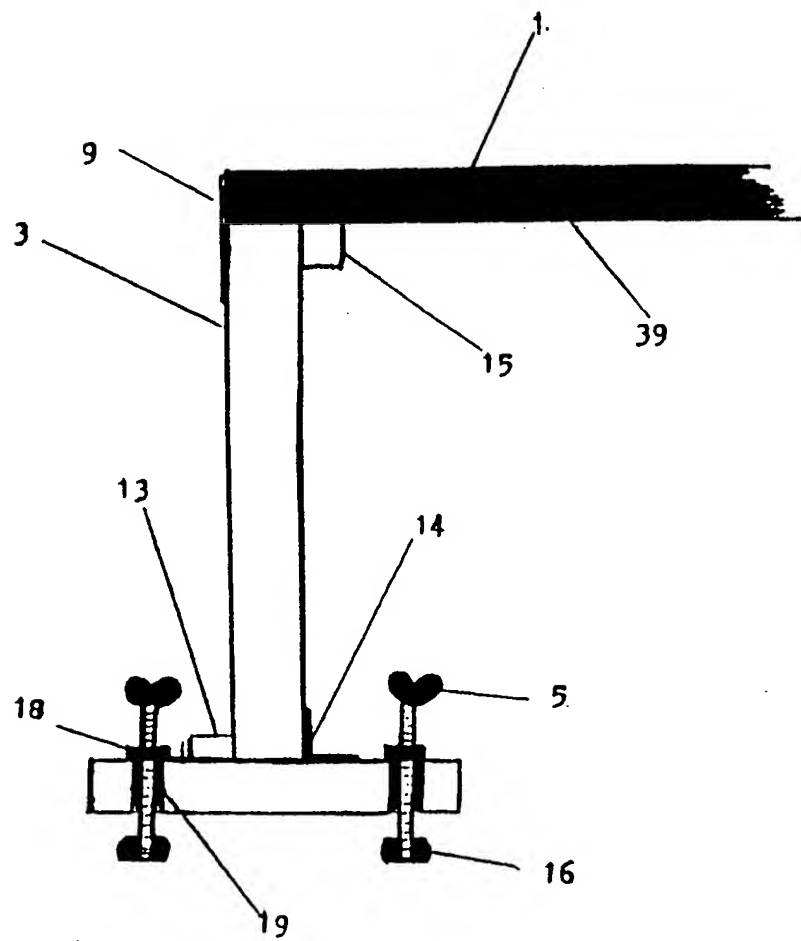


FIG. 7

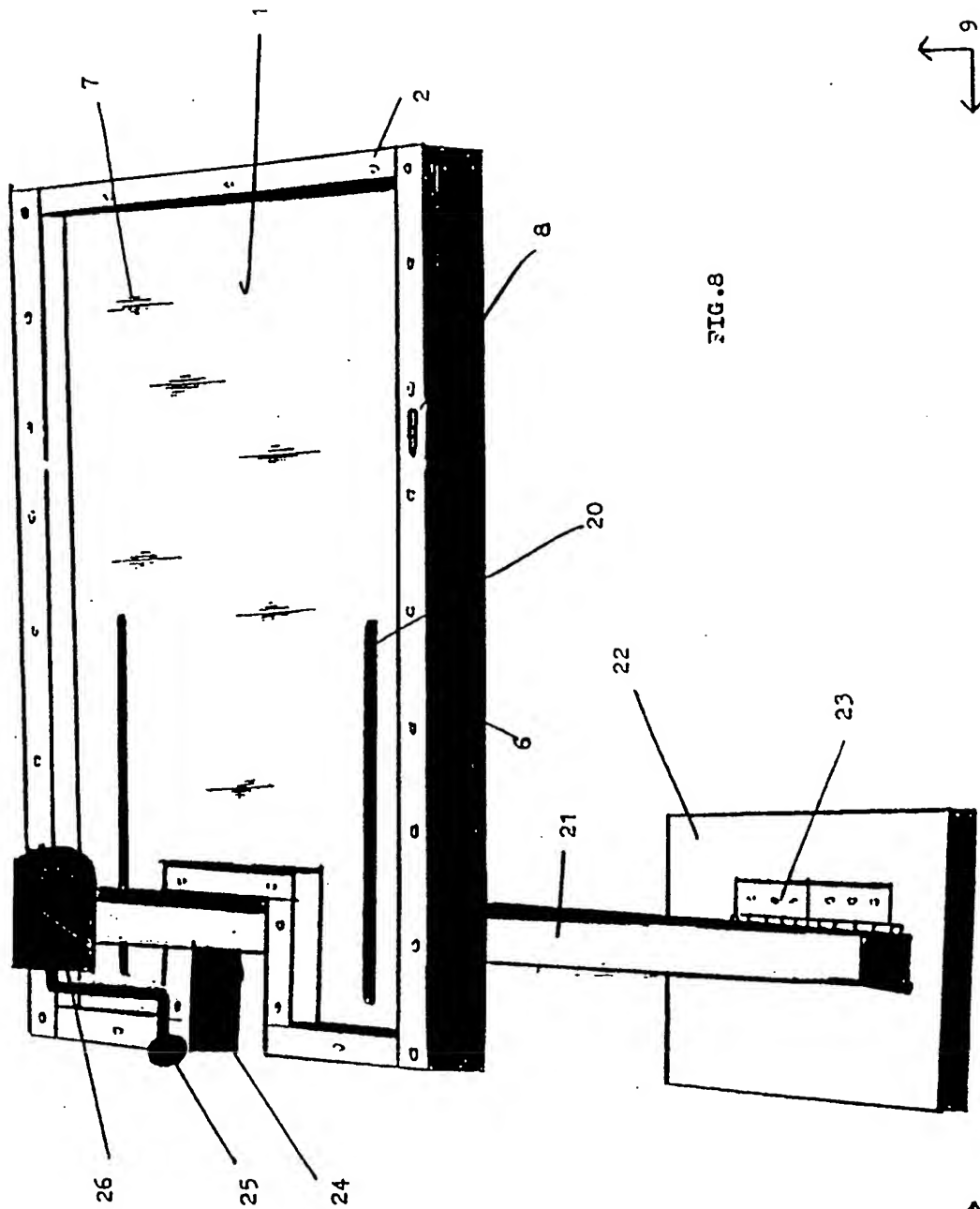


FIG. 8



FIG. 9

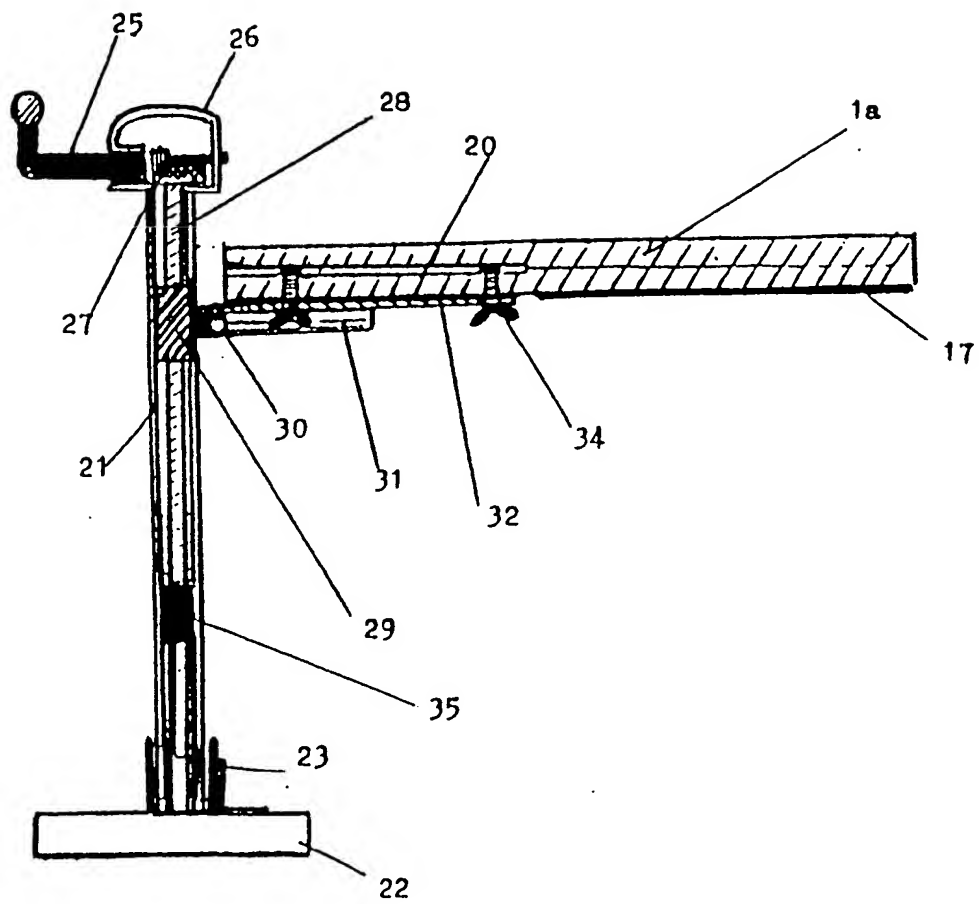
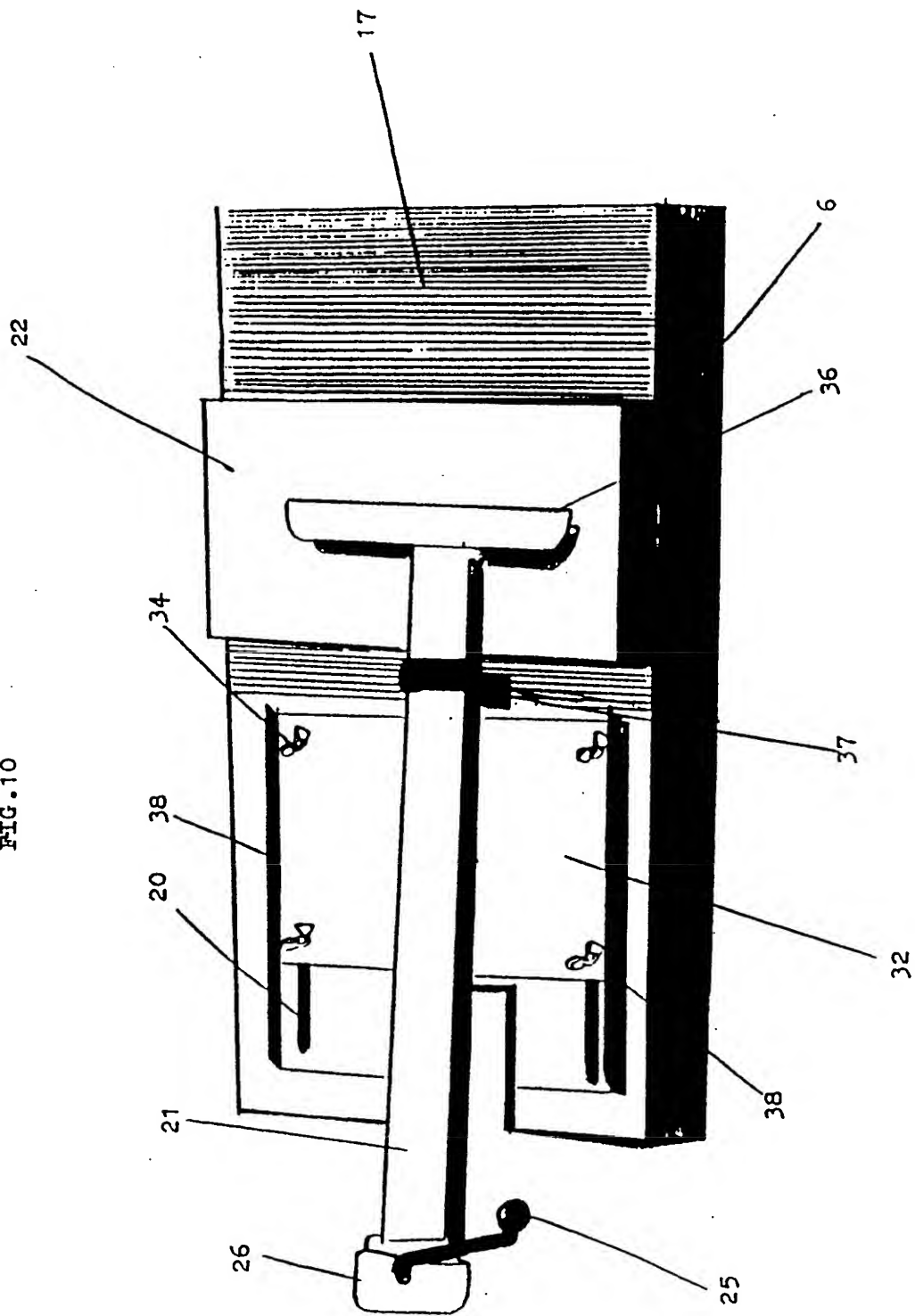


FIG. 10



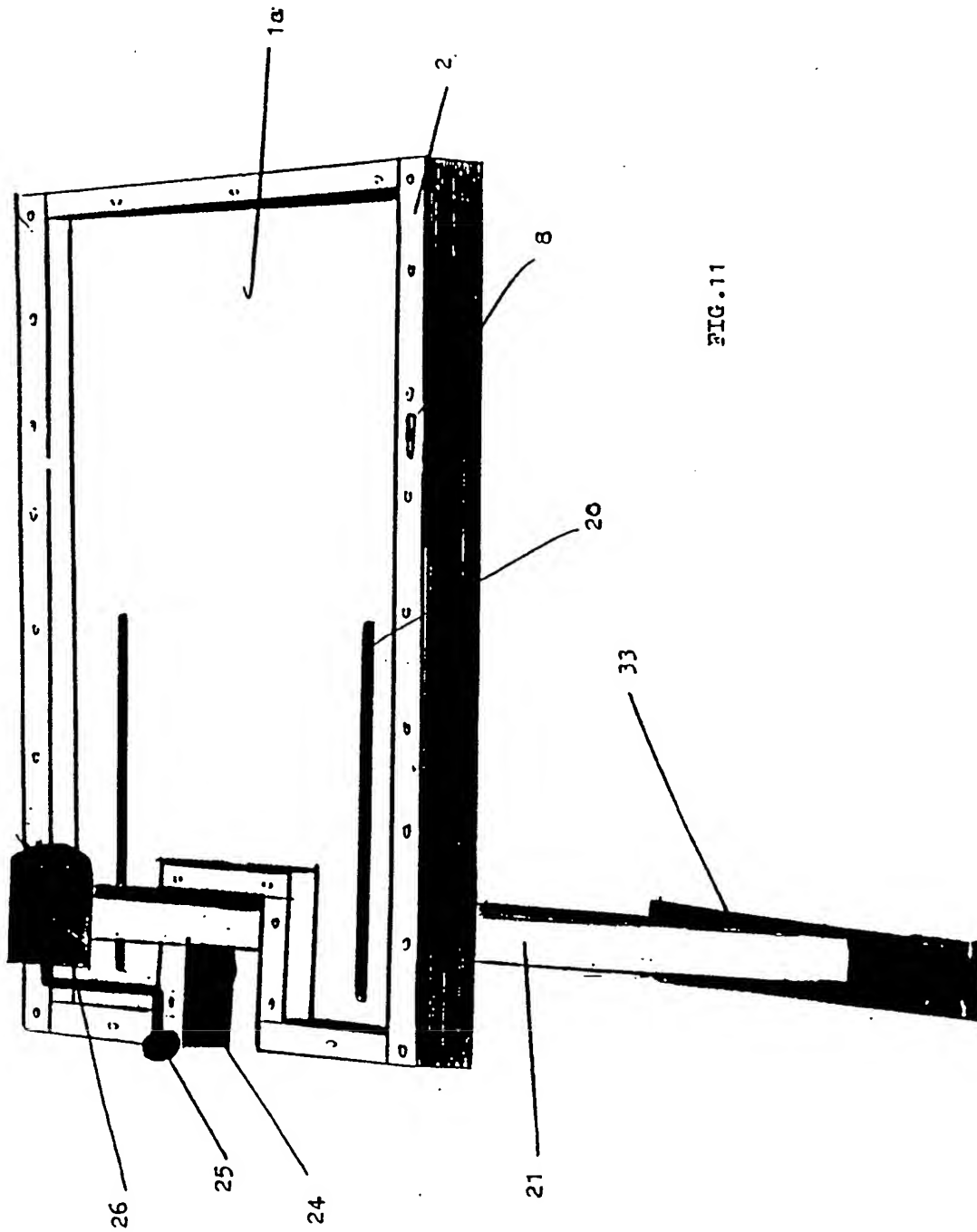


FIG. 11

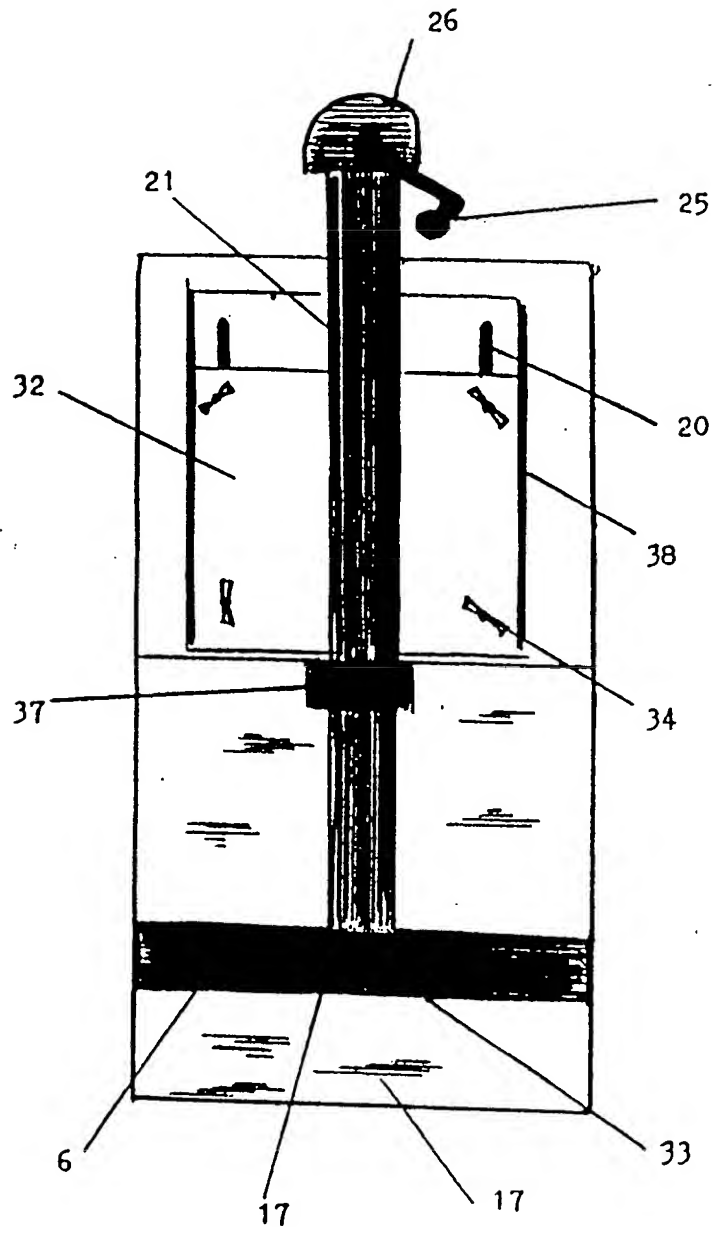
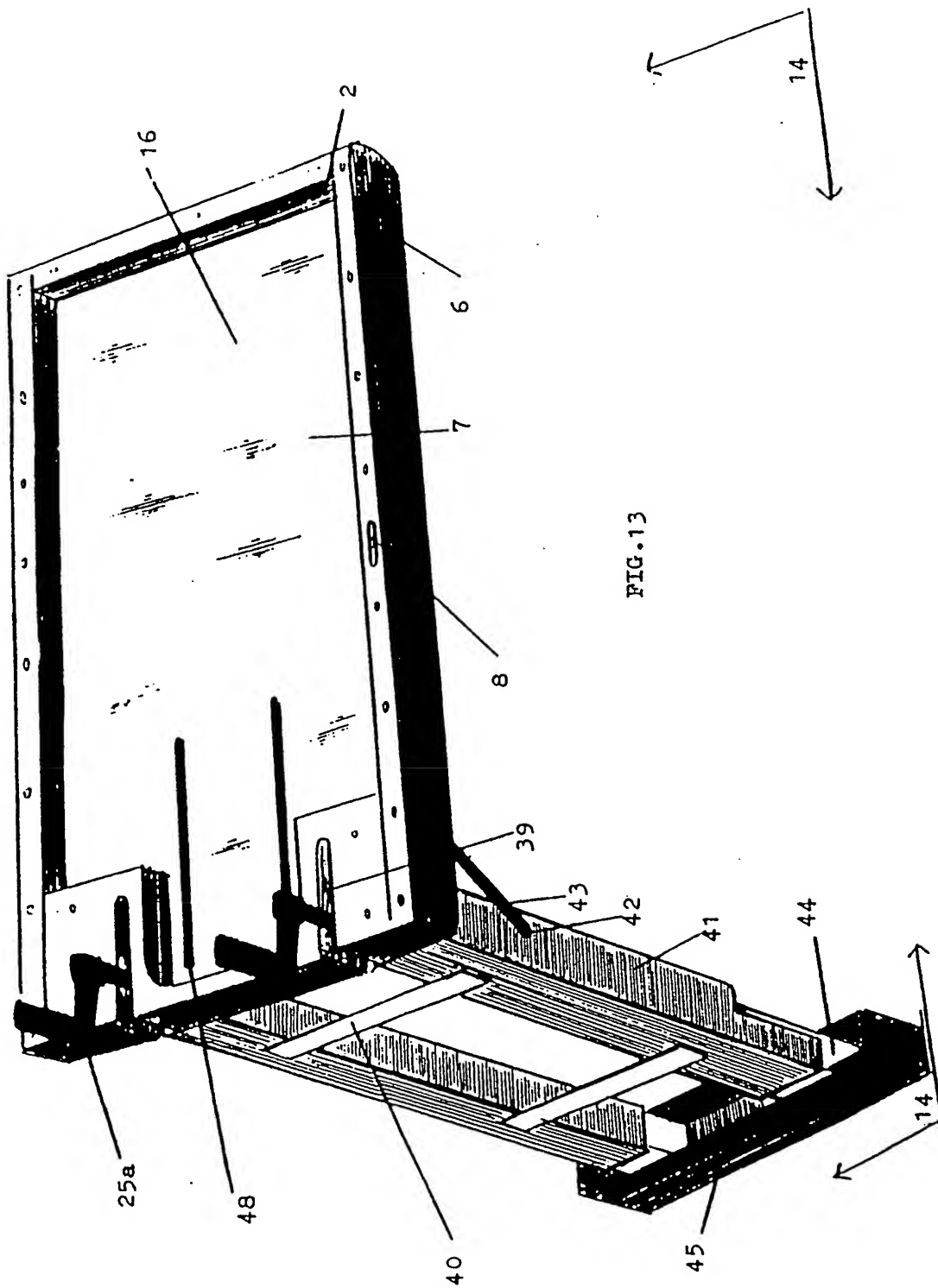


FIG.12



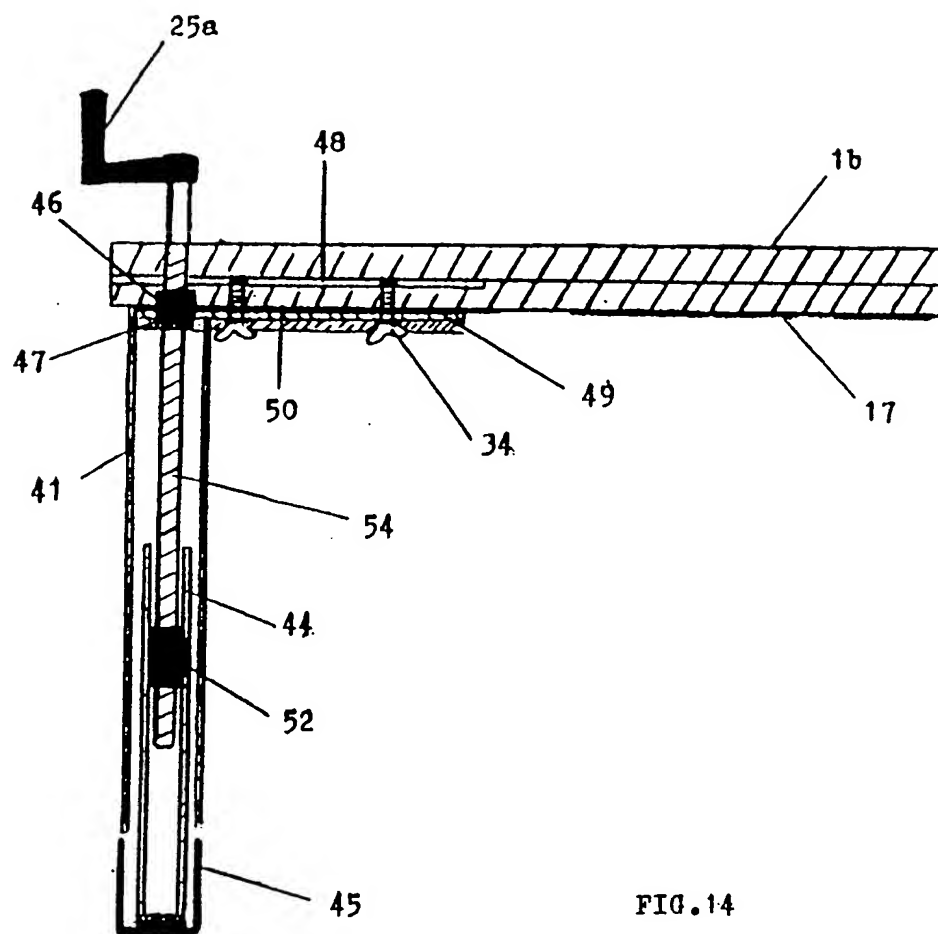
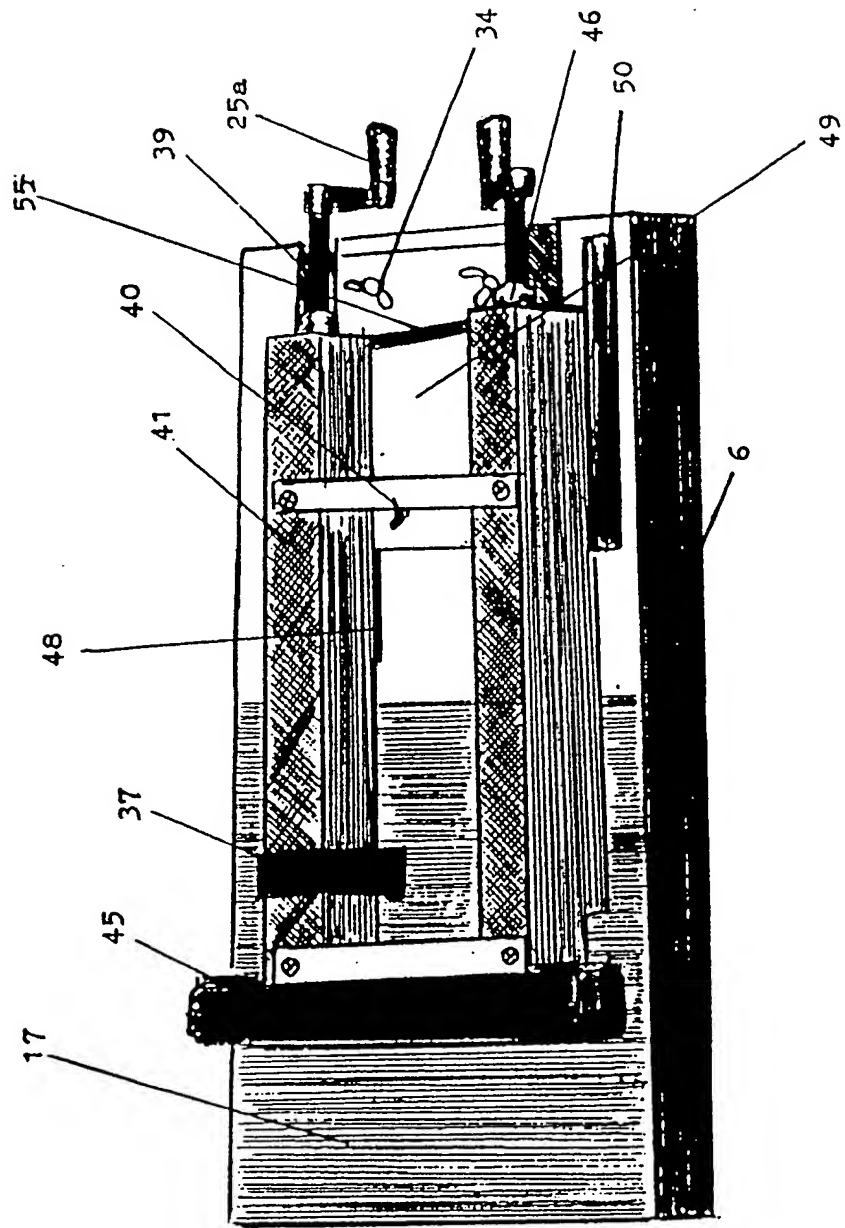


FIG. 15



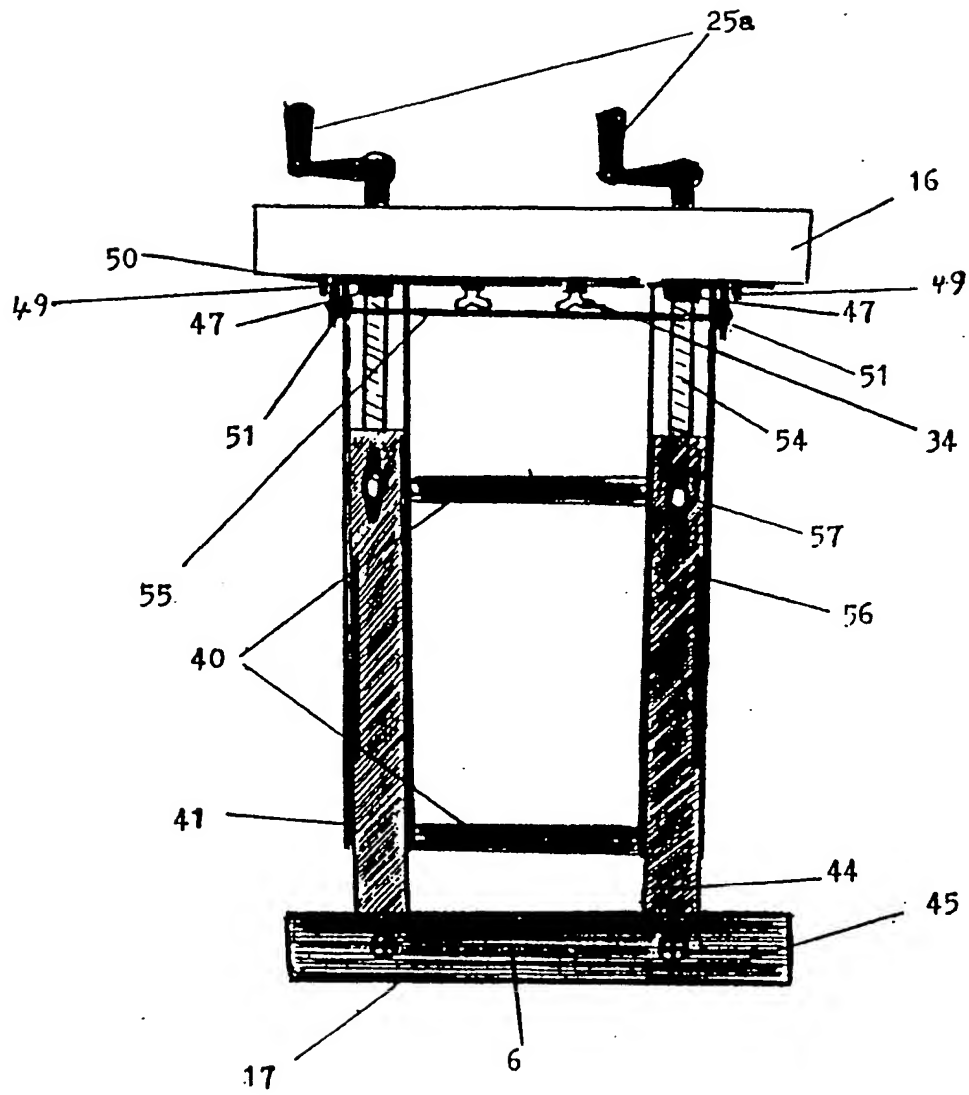
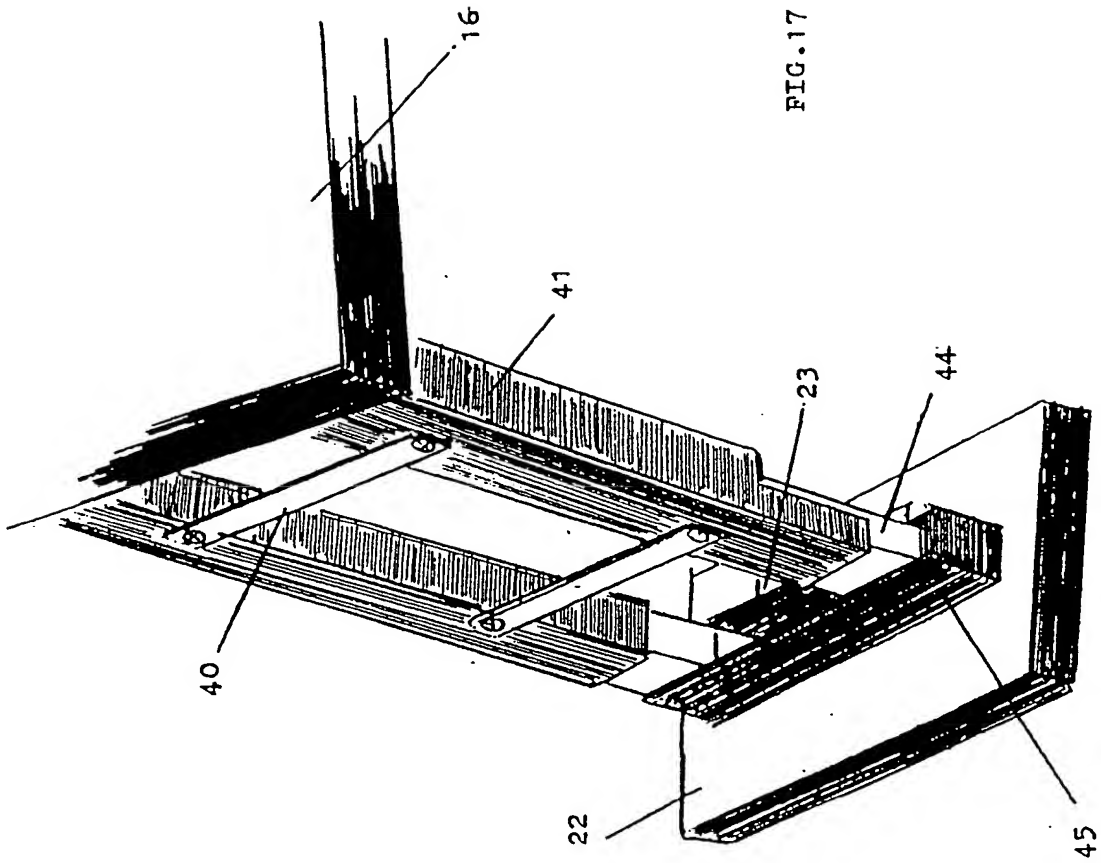
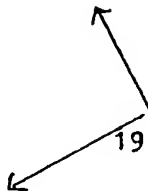
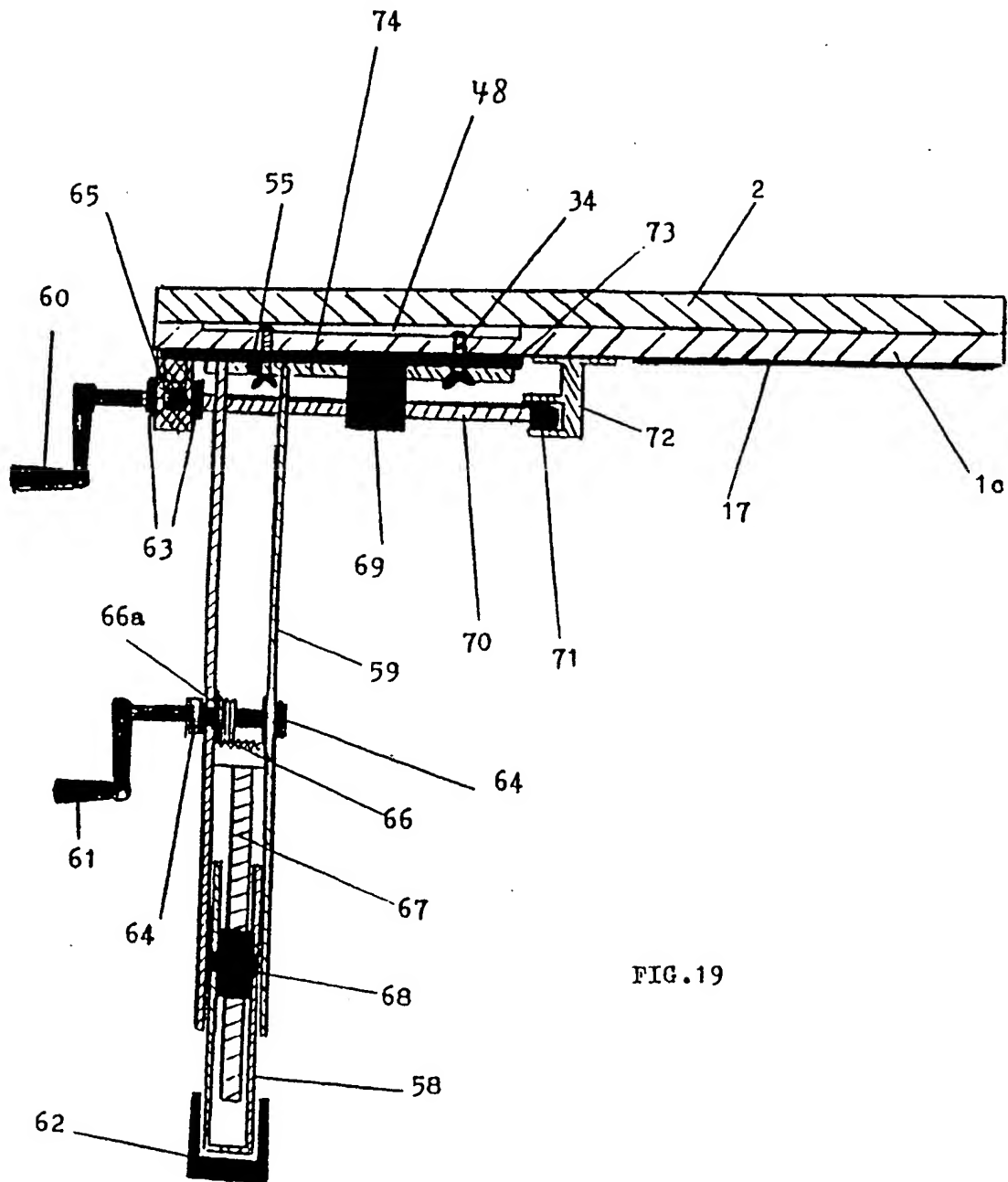


FIG. 16







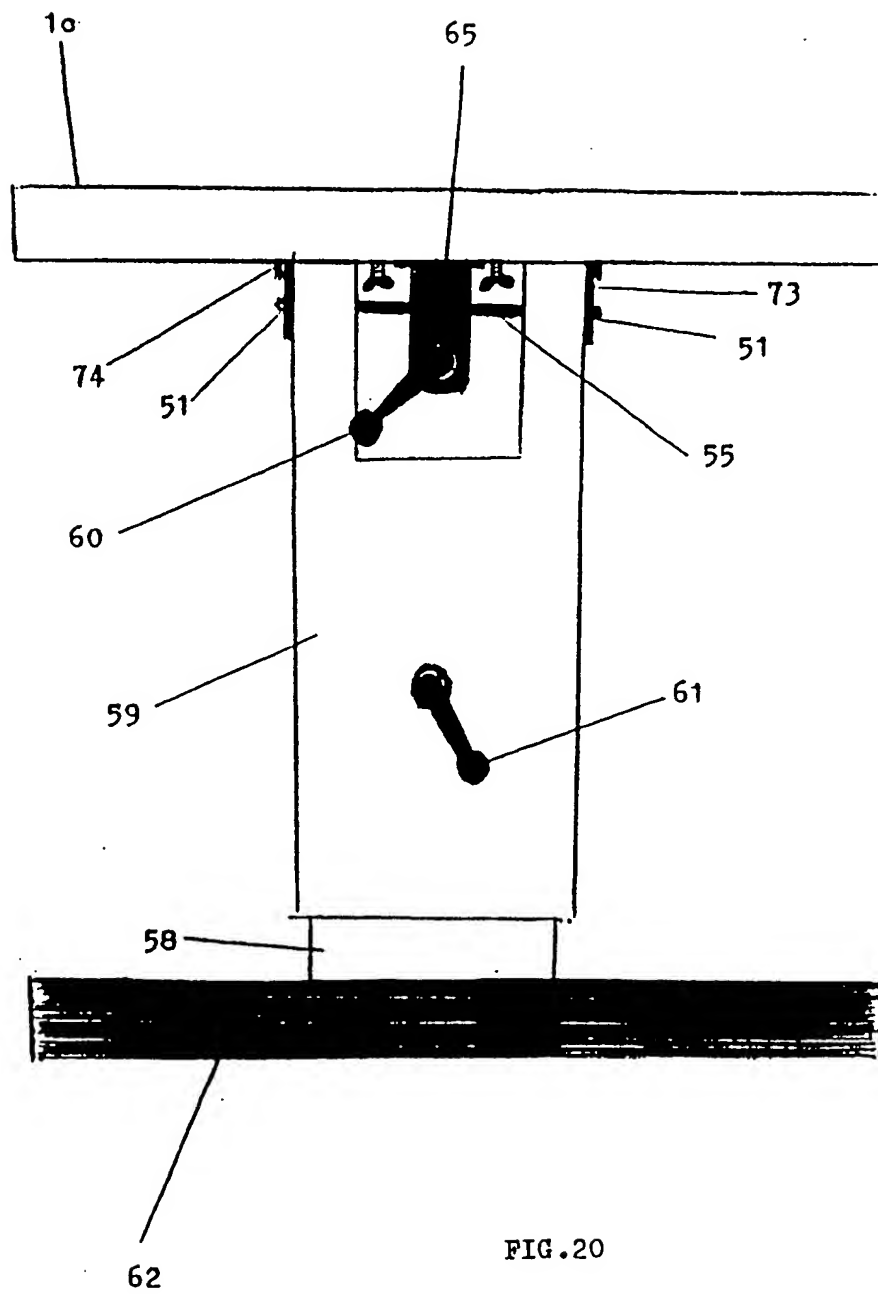


FIG. 20

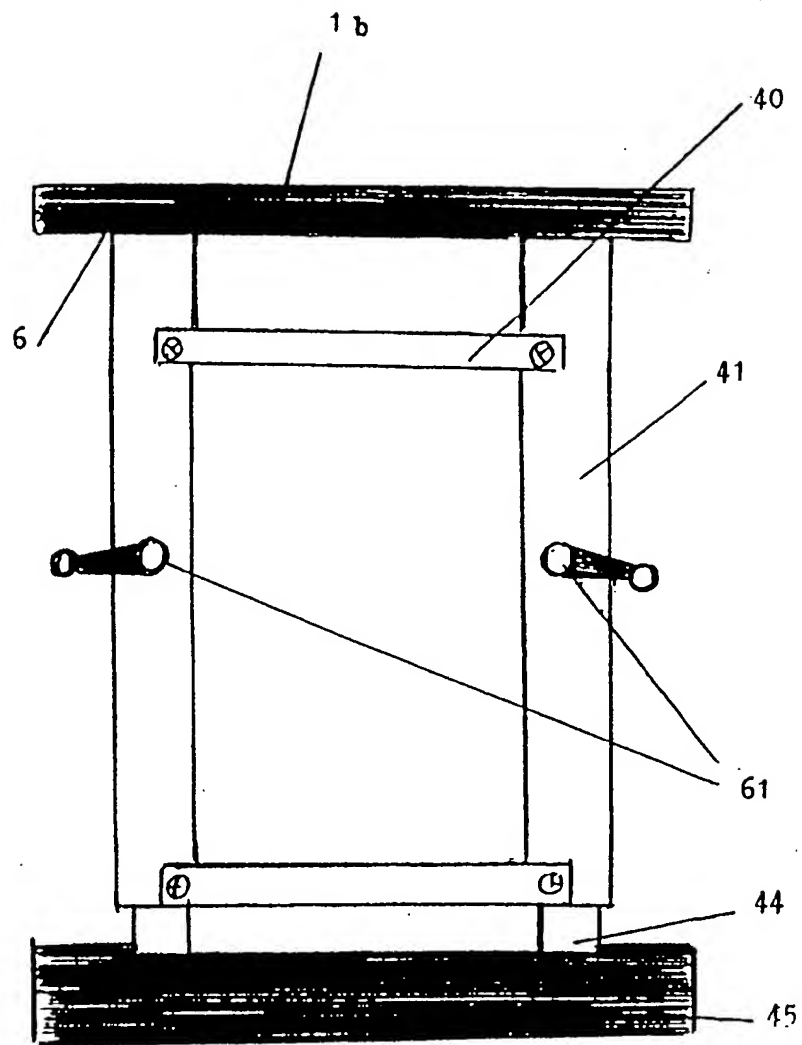


FIG. 21

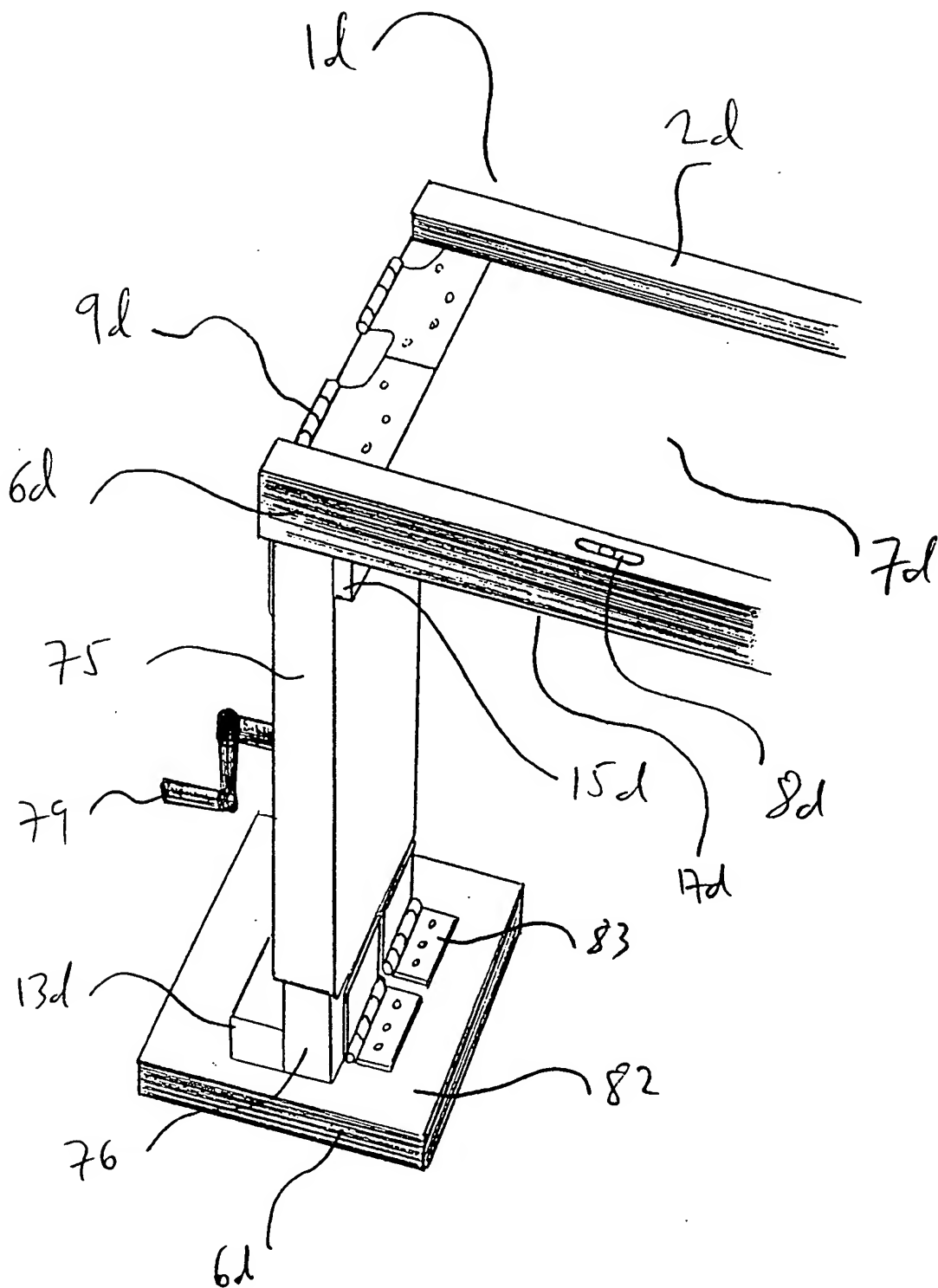


Fig. 22

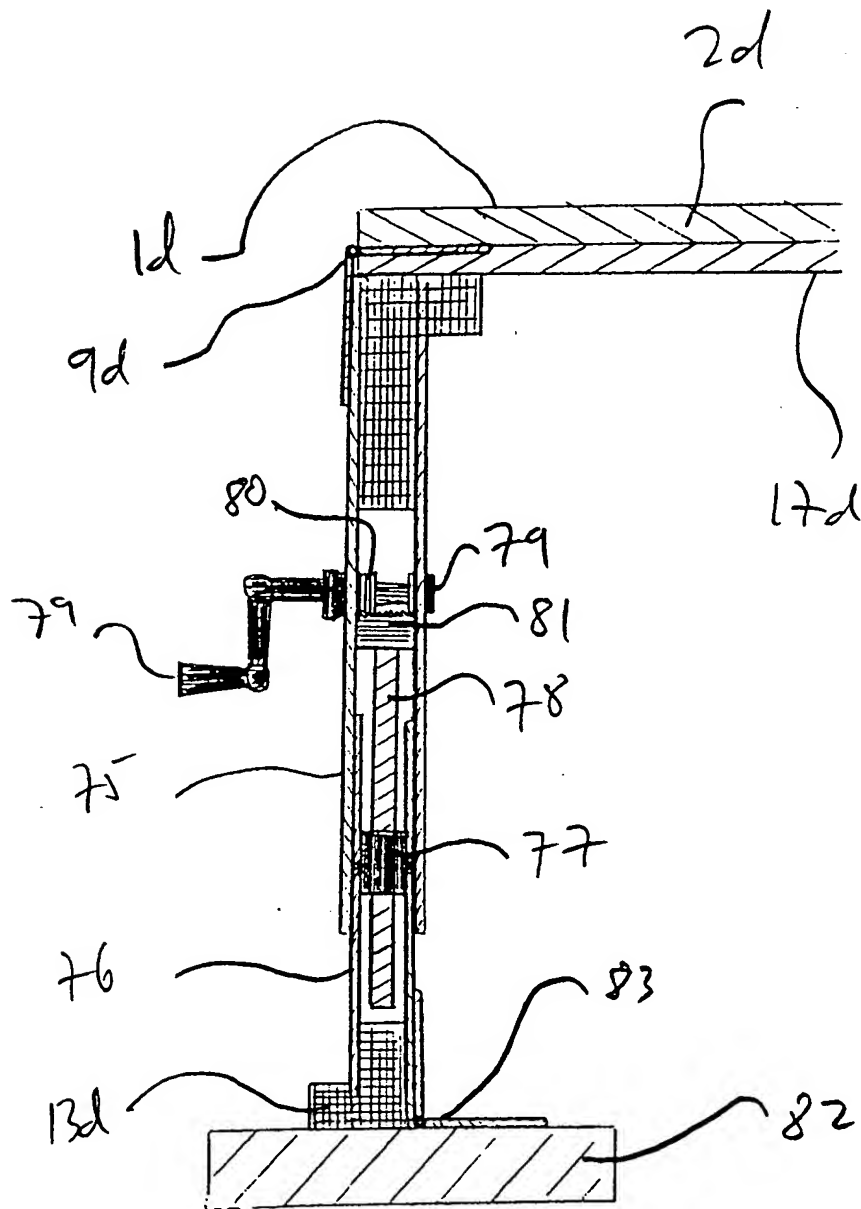


Fig. 23

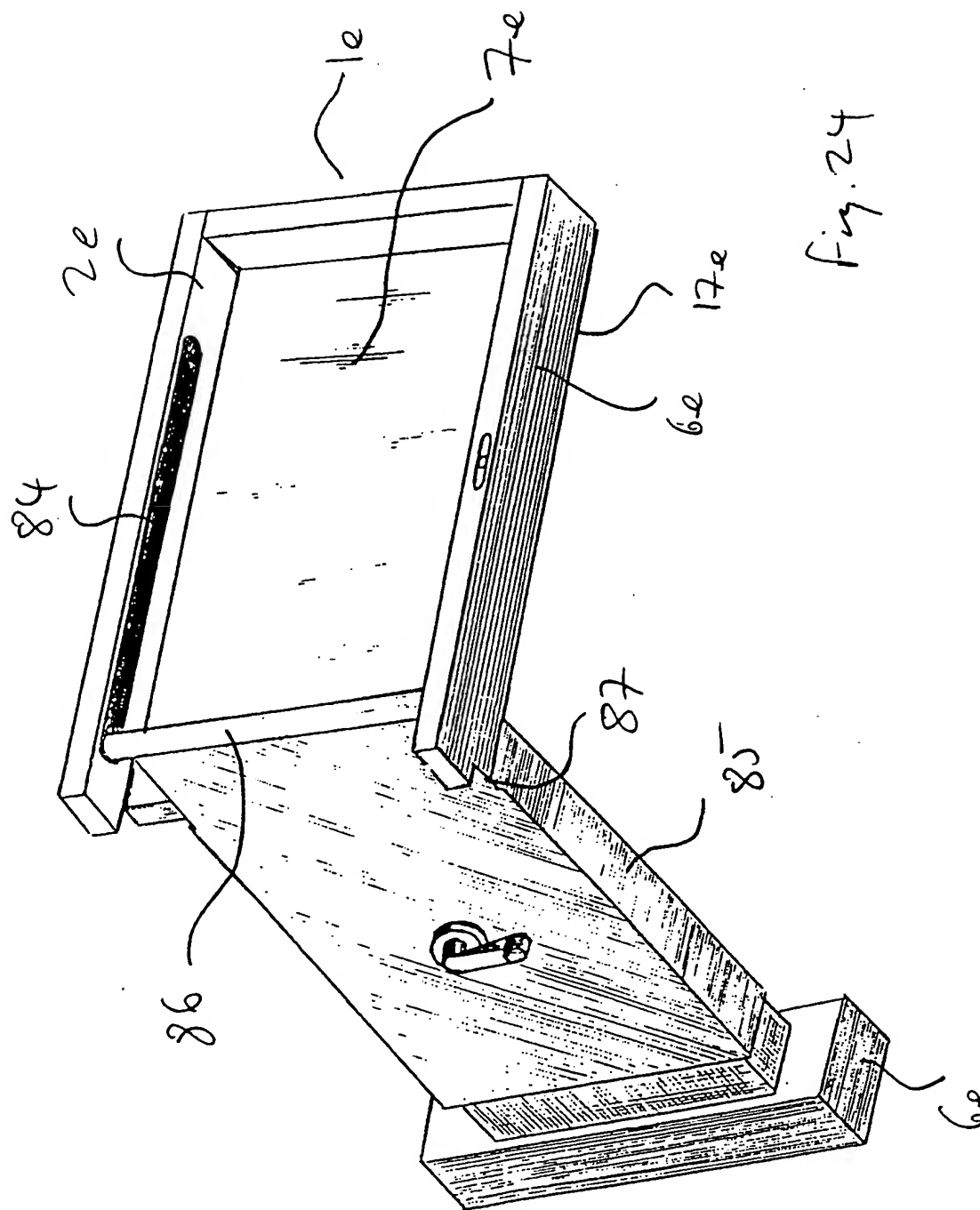
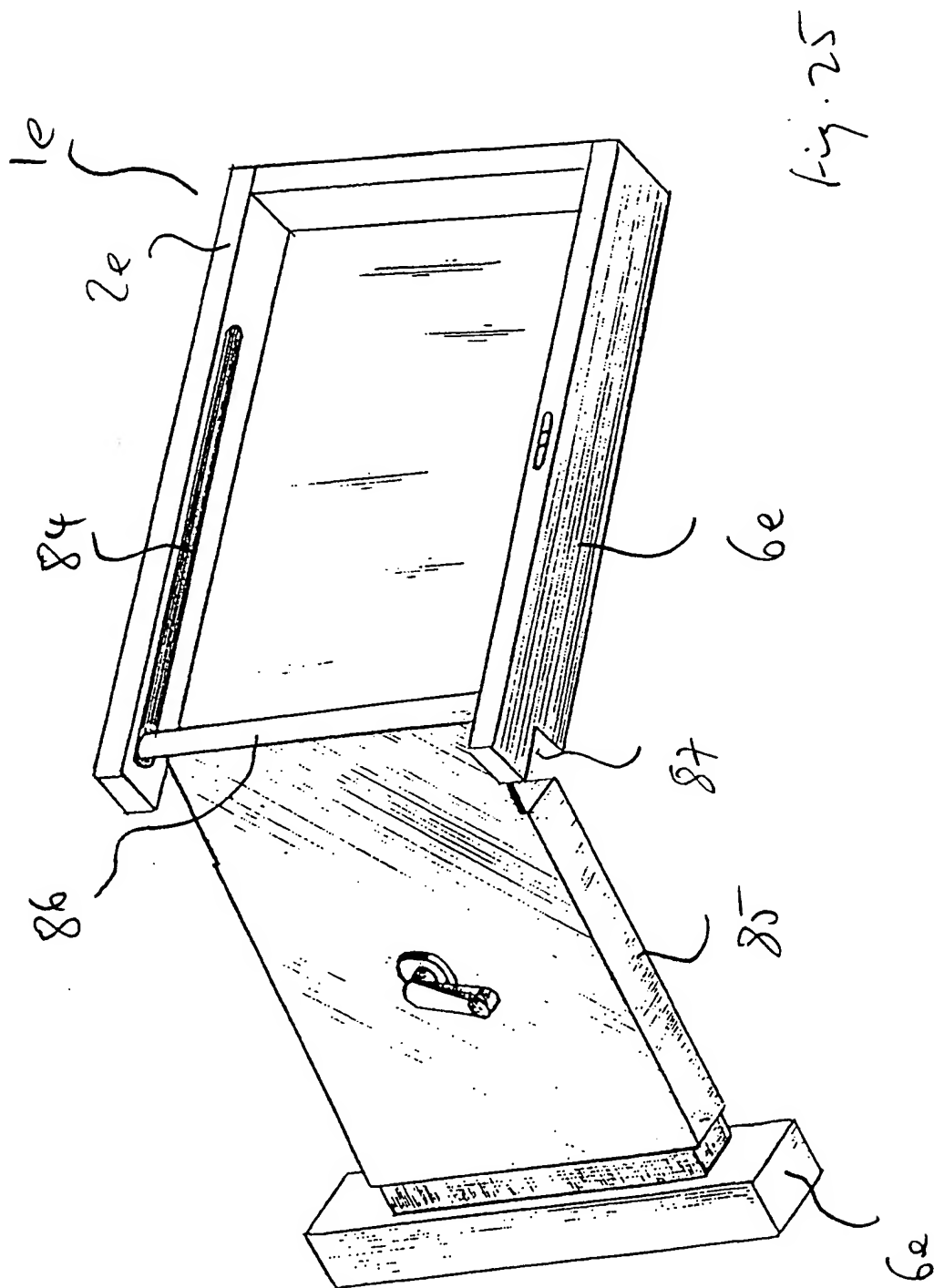


Fig. 24



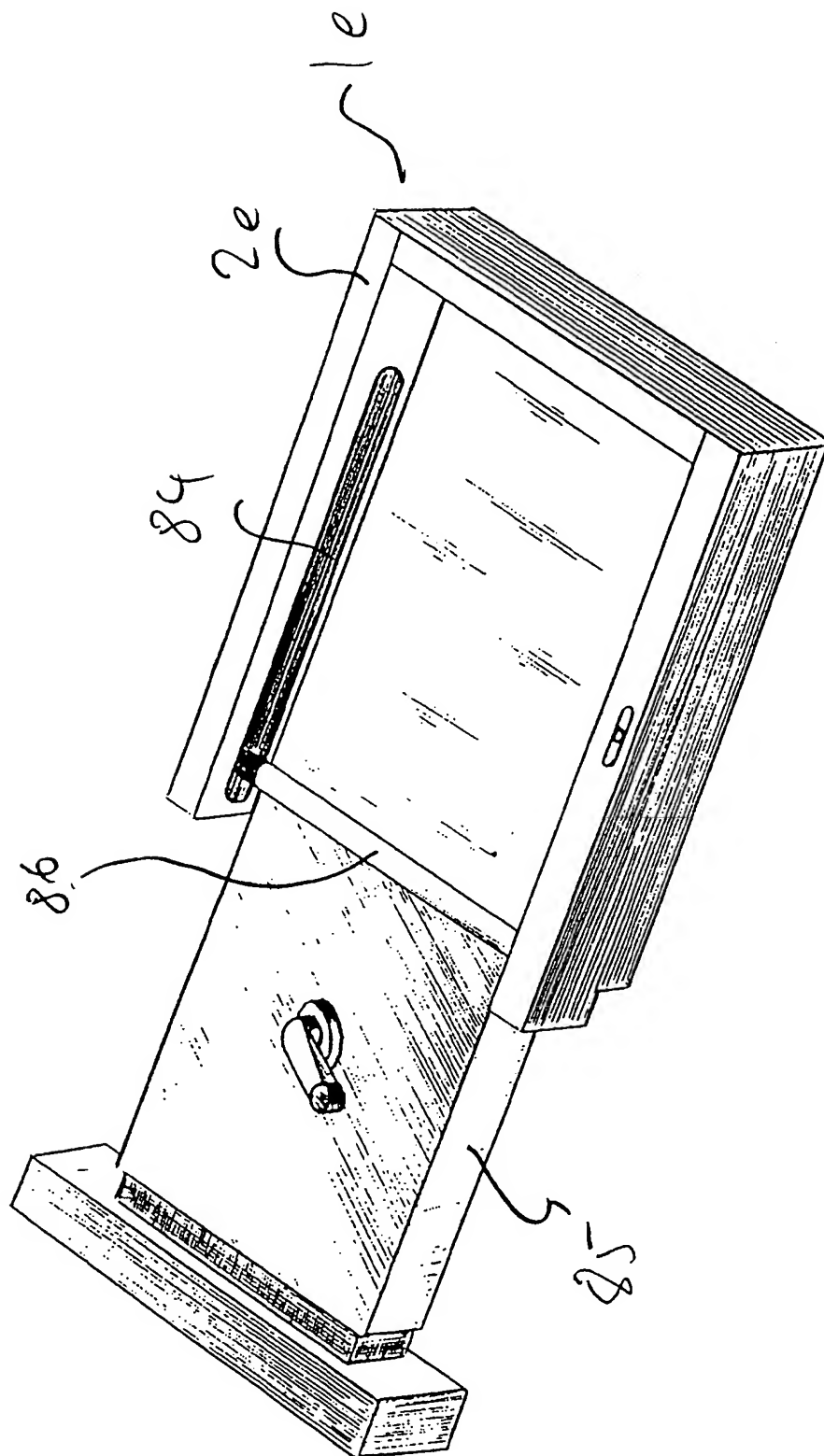


fig-26

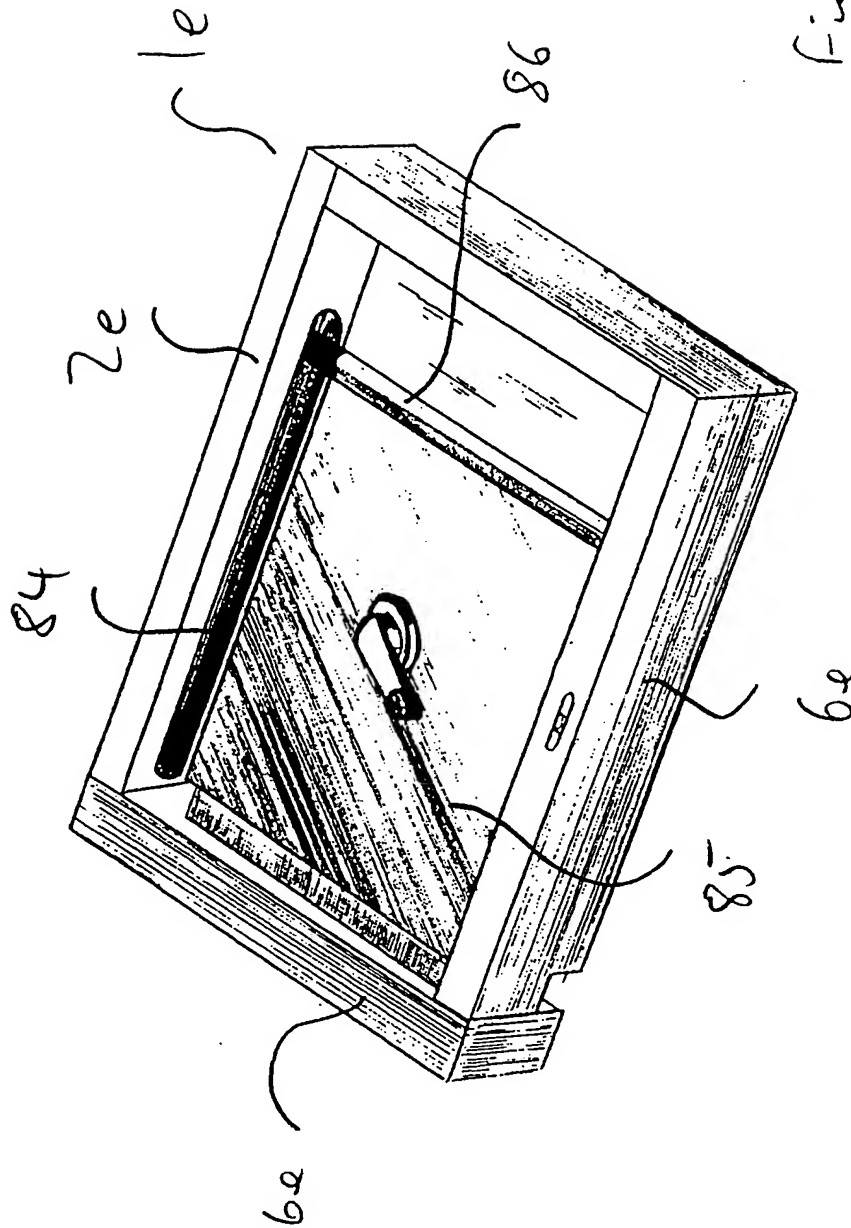


Fig. 2

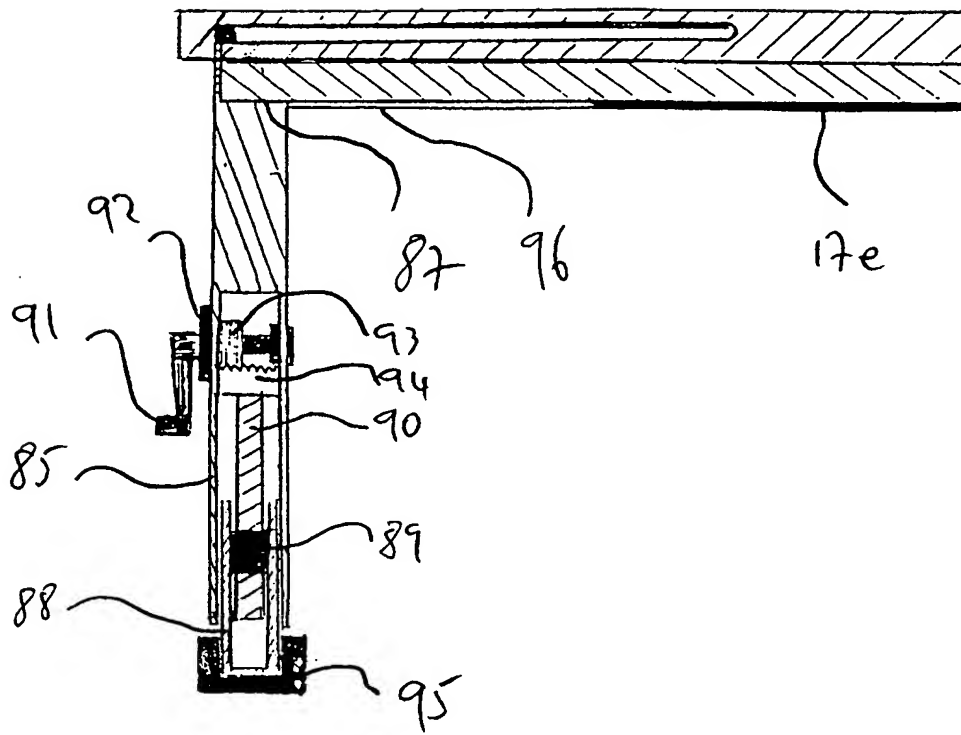


Fig. 28

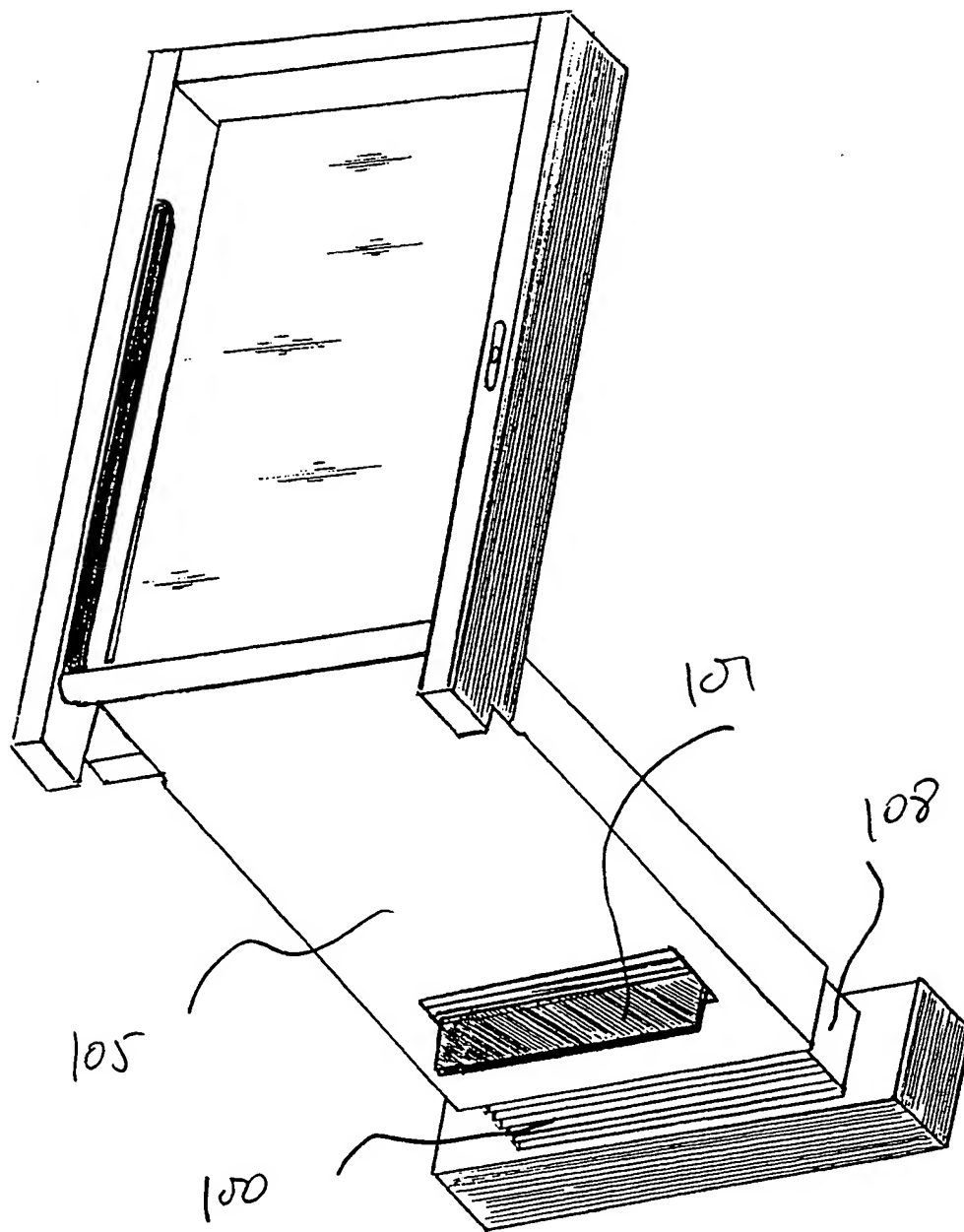


Fig. 29

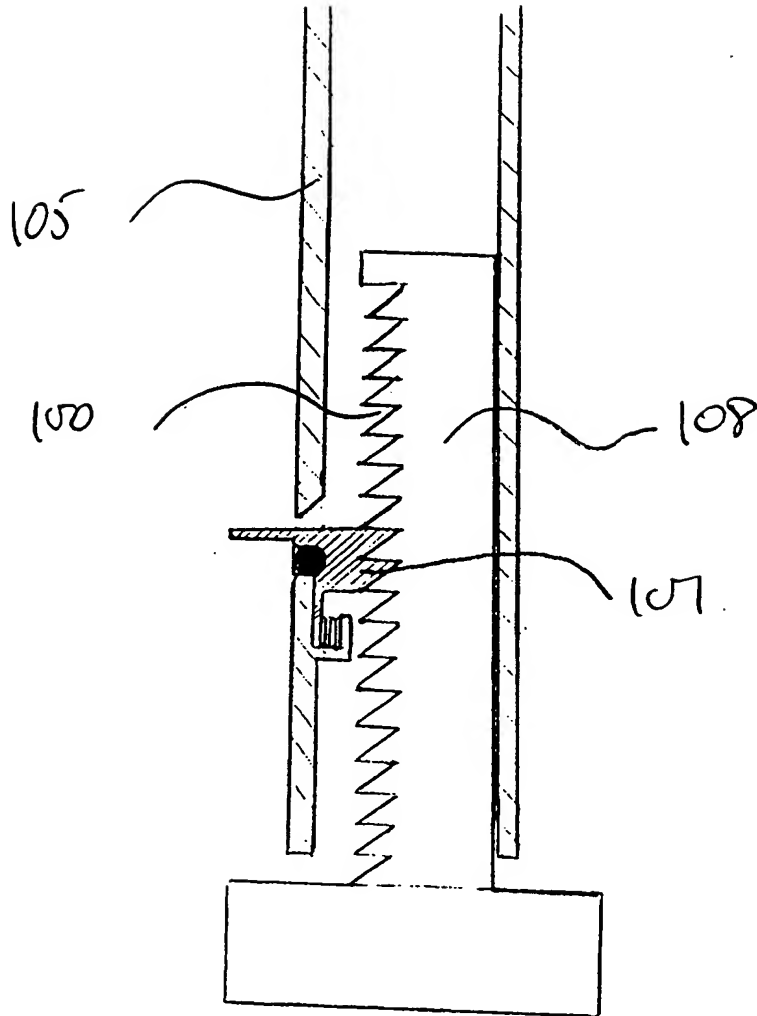


fig. 30

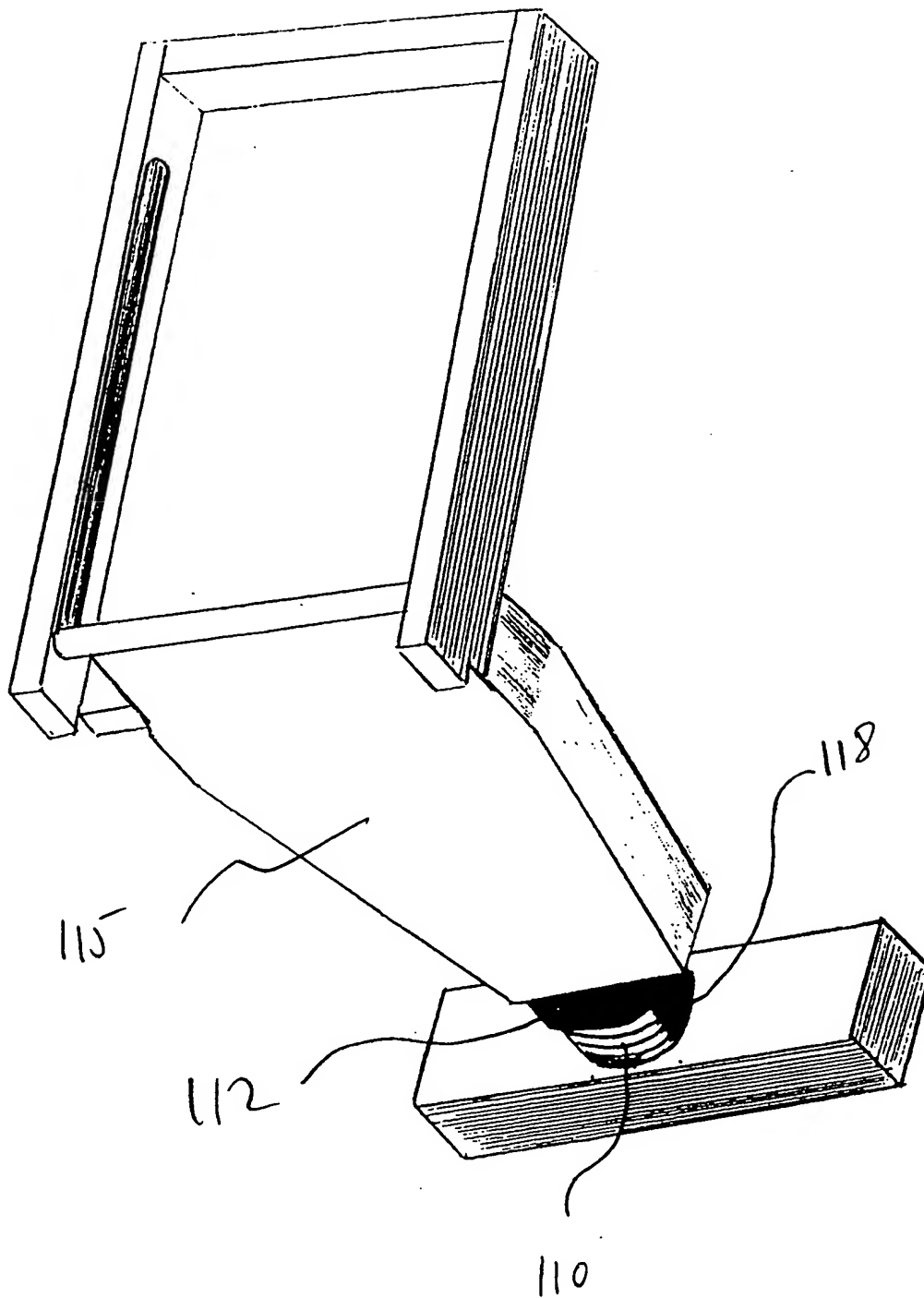


Fig. 31

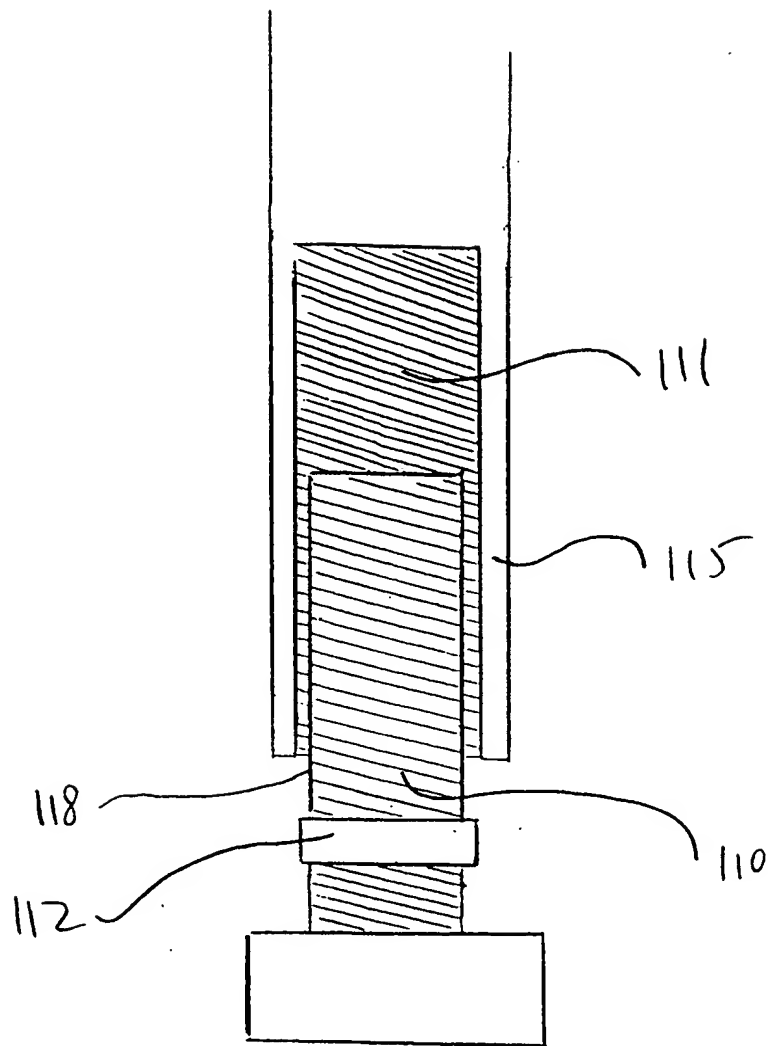


Fig. 32



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Application Number
EP 96 30 3860

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	GB-A-2 208 172 (BATTISTE) * page 1 * * claims 1-3 *	1,8	E06C7/44
Y	US-A-5 029 671 (LARSON) * column 2, line 12 - column 2, line 58 * * column 3, line 4 - column 3, line 16 * * figures 1-6 *	1,8 5,10	
A	GB-A-2 142 965 (BURTON) * page 1, line 47 - page 1, line 2 * * figures 1-3 *	9,10	
Y	FR-A-2 663 075 (TESTU) * claims 1,3,6,11; figures 1,4,7-12 *	9,10	
A	EP-A-0 144 471 (BURKINSHAW) * page 4, line 25 - page 5, line 6 * * page 5, line 30 - page 6, line 10 * * figures 1-4,7,9 *	1-4	
A	US-A-3 250 344 (ROMANO) * column 2, line 50 - column 2, line 61 * * column 3, line 20 - column 3, line 25 *	1,5,6	TECHNICAL FIELDS SEARCHED (Int.Cl.6) E06C E04G A47C
A	DE-U-86 00 609 (HÜLSTRA-WERKE HÜLS GMBH & CO.) * figures 1-4 *	6,7	
A	US-A-5 339 921 (FAUPEL) * figures 1-3 *	7	
A	FR-A-2 471 467 (FETT) * page 2, line 33 - page 4, line 12 * * figures 1,2 *	1,9,10	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 August 1996	Examiner Hendrickx, X
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